

**CITY OF RIVERSIDE  
PUBLIC UTILITIES  
WATER DIVISION**

**CWD STANDARD DRAWINGS, 2007**



## INDEX

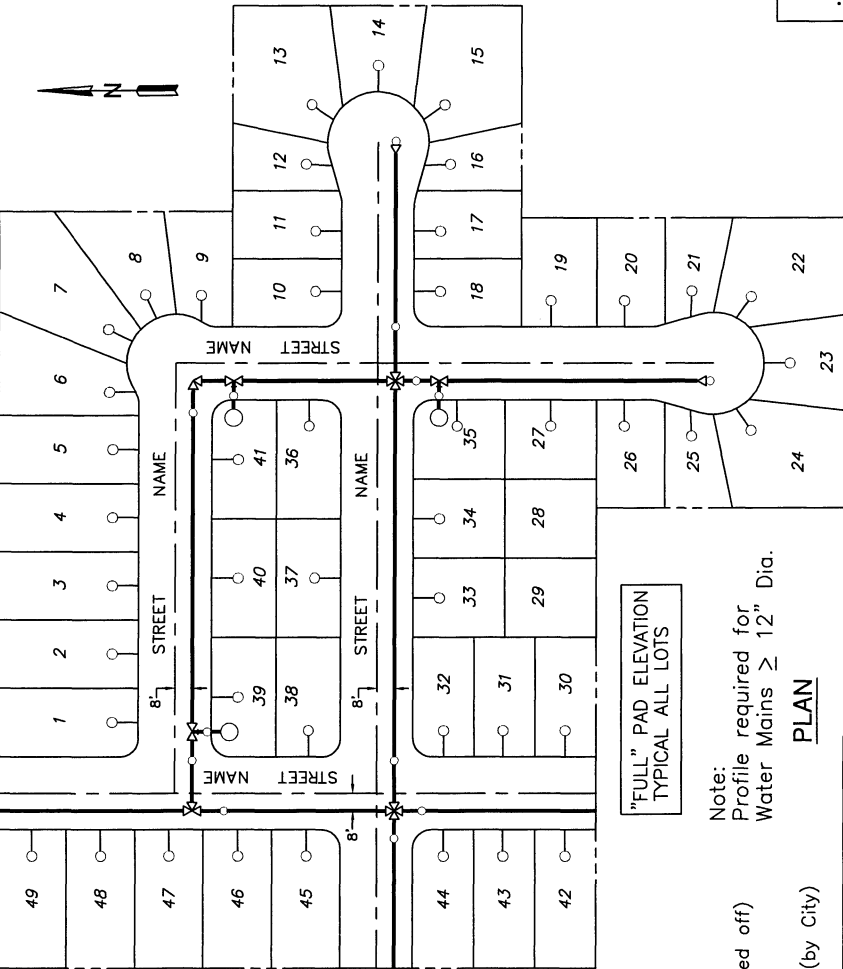
CWD-010-1	TYPICAL PLAN LAYOUT, SHEET 1 OF 2
CWD-010-2	TYPICAL PLAN LAYOUT, SHEET 2 OF 2
CWD-015-1	WATER MAIN AND SANITARY SEWER SEPARATION, CASE 1
CWD-015-2	WATER MAIN AND SANITARY SEWER SEPARATION, CASE 2
CWD-015-3	WATER MAIN AND SANITARY SEWER SEPARATION, NOTES
CWD-023-1	STRUCTURE INTERFERENCE – TYPE A, B, OR C ENCASEMENT
CWD-023-2	STRUCTURE INTERFERENCE – ENCASEMENT SECTIONS
CWD-030	THRUST BLOCK DETAILS – TYPICAL
CWD-040-1	TYPICAL PIPE TRENCH, BEDDING, BACKFILL, AND PAVEMENT REQUIREMENTS
CWD-040-2	TYPICAL PIPE TRENCH, BEDDING, BACKFILL, AND PAVEMENT REQUIREMENTS – GENERAL NOTES
CWD-220	TYPICAL SPLIT BUTT STRAP – 8” THROUGH 42” DIAMETER (150PSI DESIGN PRESSURE)
CWD-300	TYPICAL FLANGED OUTLET – 4” THROUGH 20”
CWD-320	TYPICAL FLANGED TANGENT OUTLET – 4” THROUGH 12” DIAMETER
CWD-340	TYPICAL THREADED OUTLET – 1” THROUGH 2.5” DIAMETER
CWD-350	TYPICAL MANWAY FOR LARGE PIPELINES
CWD-408	6” HYDRANT HEAD BLOW-OFF ML&C STEEL BURY – 24” MAIN AND SMALLER
CWD-409	6” HYDRANT HEAD BLOW-OFF DI BURY – 24” MAIN AND SMALLER
CWD-410-A	8” BLOW-OFF BELOW GRADE WITH LESS THAN 10’ OF COVER
CWD-410-B	8” BLOW-OFF BELOW GRADE WITH MORE THAN 10’ OF COVER
CWD-411-A	TYPICAL 2” BLOW-OFF ASSEMBLY FOR MAINS WITH LESS THAN 42” OF COVER
CWD-411-B	TYPICAL 2” BLOW-OFF ASSEMBLY FOR MAINS WITH MORE THAN 42” OF COVER
CWD-412	6” THROUGH 10” TEMPORARY CONSTRUCTION END CAPS FOR FLUSHING, TESTING, AND CHLORINATION
CWD-413	12” TEMPORARY CONSTRUCTION END CAP FOR FLUSHING, TESTING, AND CHLORINATION
CWD-432	TEMPORARY WATER SAMPLER
CWD-433	WATER QUALITY SAMPLING STATION
CWD-451	TYPICAL 2” AIR VALVE INSTALLATION
CWD-460	TYPICAL 4” AIR VALVE INSTALLATION
CWD-462	TYPICAL 6” AIR VALVE INSTALLATION
CWD-465	TYPICAL 8” AIR VALVE INSTALLATION
CWD-500	TYPICAL VALVE BOX FOR GATE VALVES
CWD-504	TAPPING SLEEVE AND TAPPING VALVE DETAIL FOR DOMESTIC AND FIRE SERVICES
CWD-510	TYPICAL VALVE BOX FOR BUTTERFLY VALVES
CWD-515	TYPICAL SPLIT-SLEEVE LINER AND CAP FOR 8” AND 10” BOX
CWD-570	TYPICAL CONDUIT SUPPORT
CWD-600	1” WATER SERVICE
CWD-601	2” WATER SERVICE

CWD-615	4" THROUGH 10" ABOVE GROUND FIRE SERVICE
CWD-616	.75" THROUGH 2.5" BACKFLOW DEVICE INSTALLATION
CWD-617	3" AND LARGER BACKFLOW DEVICE INSTALLATION
CWD-620-1	3", 4", AND 6" COMPOUND METER WATER SERVICE
CWD-620-2	BILL OF MATERIALS FOR 3", 4", AND 6" COMPOUND METER WATER SERVICE
CWD-621-1	FMCT WATER SERVICE
CWD-621-2	BILL OF MATERIALS FOR 8" FMCT WATER SERVICE
CWD-622-1	10" DOMESTIC WATER SERVICE
CWD-622-2	BILL OF MATERIALS FOR 10" COMPOUND WATER SERVICE
CWD-700	REGULAR AND SUPER FIRE HYDRANT DETAIL
CWD-800	NON TRAFFIC VAULT FOR 3" THROUGH 6" COMPOUND METERS
CWD-801	NON TRAFFIC VAULT FOR 8" COMPOUND METERS
CWD-802	NON TRAFFIC VAULT FOR 10" COMPOUND METERS
CWD-811	BLOW-OFF MANHOLE INSTALLATION
CWD-816	MANHOLE DETAIL – 48" MAX ID PIPE
CWD-900-A	4" DIAMETER GUARD POST INSTALLATION
CWD-900-B	2.5" DIAMTER GUARD POST INSTALLATION
CWD-922	TEST LEAD INSTALLATION
CWD-923	FLANGE INSULATION AND TEST LEAD INSTALLATION
CWD-924	JOINT BOND DETAILS
CWD-960-1	NOTIFICATION SIGN
CWD-960-2	NOTIFICATION SIGN

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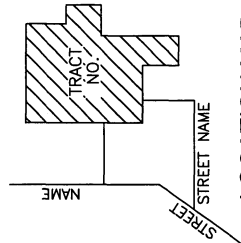
# LEGEND

- New Ductile Iron Pipe
- Tract Boundary
- Tap Sleeve w/Tap GV
- Gate Valve
- New Cap w/Blow-Off
- New Ell
- New Tee
- New Cross
- New FH
- Exist Pipe
- Exist Service
- Exist FH
- Exist Valve
- Electrical UG
- St Light Conduit
- Telephone UG
- Sewer
- Gas
- Storm Drain
- New Service
- New Service (to be locked off)
- New Service (by City)
- New Landscape Service (by City)



# GENERAL NOTES

- GENERAL NOTES TO BE SUBMITTED AT FIRST PLAN CHECK
- SCALE OF THE DRAWINGS SHALL BE 1" = 40'.
- SIZE OF DRAWINGS SHALL BE "SIZE 5" - 22" X 34" OR 24" X 36".
- REFERENCE SECTION 2-3.
- CAD REFERENCE, EXAMPLE TITLE SHEET: G:\WATER\ACAD\COMMON\Drafting Stds\CITY14.dwg



# LOCATION MAP

(Include Index Map if more than 1 sheet)

- e.g.:
- Section View of Undercrossing
  - Section View of Overcrossing
  - System Connection

DETAILS  
(As Required)

STANDARD CITY OF RIVERSIDE  
PUBLIC UTILITIES TITLE BLOCK  
(N7S)

# PIPE CURVE DATA

PIPE CURVE DATA	R	Δ	L	T
①				
②				
③				

# BILL OF MATERIALS

SYMBOL	ITEM	MAIN	FH	SERV	BEARING AREA
○					
○					
○					
○					

TWO DAYS BEFORE YOU DIG  
CALL Underground Service Alert  
TOLL FREE: 1-800-227-2600

# BENCH MARK:

DEVELOPER NAME:

NOTE: THIS SYSTEM SERVED BY \_\_\_\_\_ ZONE

# ENGINEERS BLOCK

SHALL INCLUDE:  
Address  
Telephone No.

# ENGINEERS SEAL

# CITY OF RIVERSIDE WATER SYSTEM

# TITLE

# CITY OF RIVERSIDE DEPARTMENT OF PUBLIC UTILITIES

DRAWING NO.

DIV.

W

PERMIT PLUS NO.

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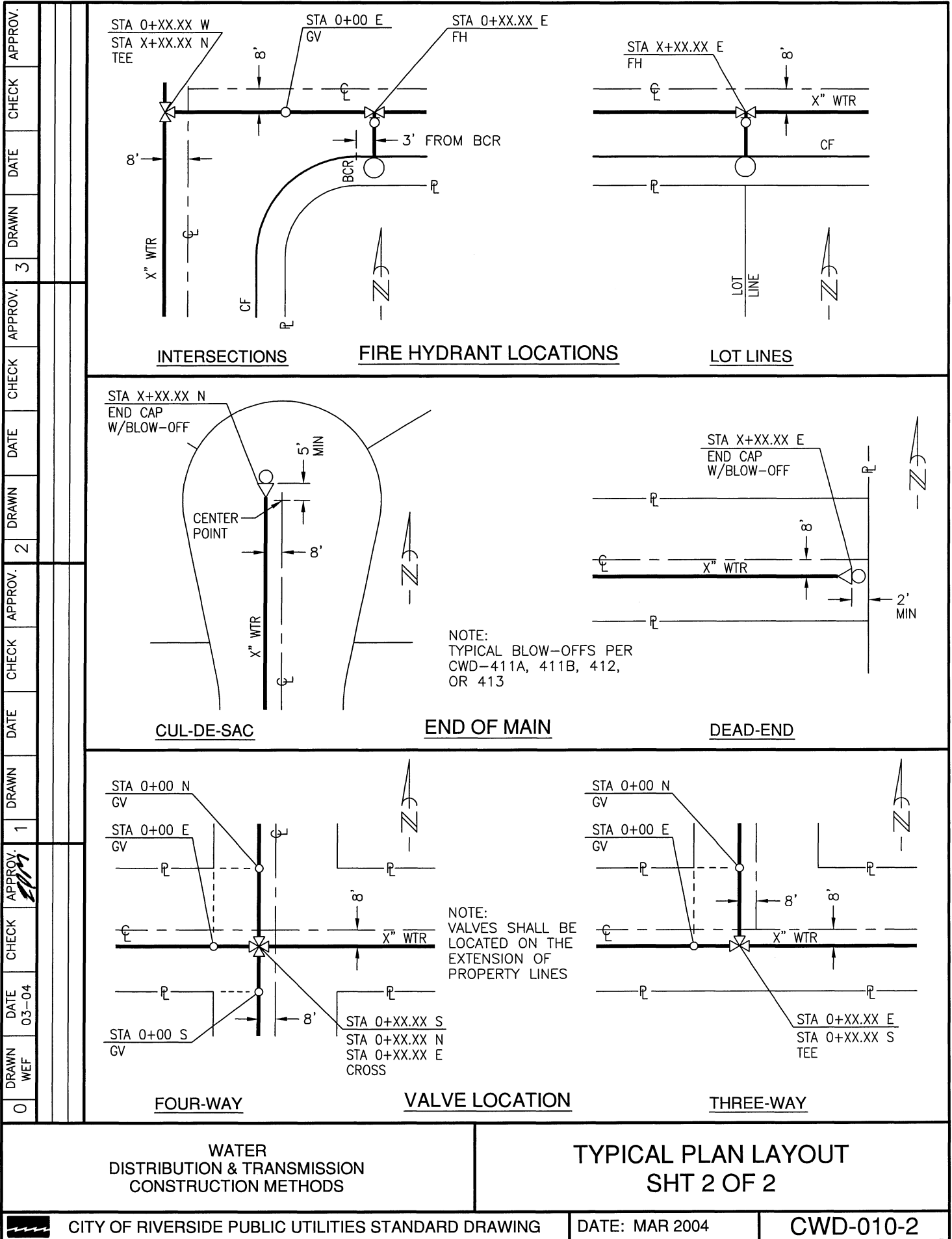
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## INSTALLATION OF NEW SANITARY SEWER

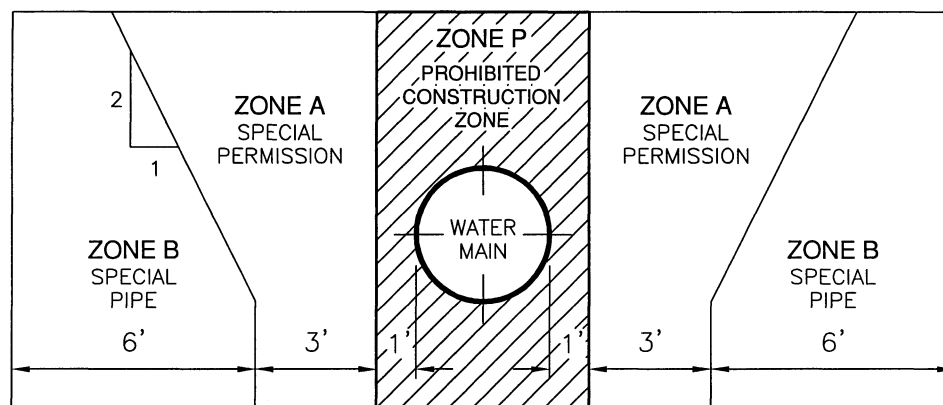


FIGURE 1 - PARALLEL CONSTRUCTION

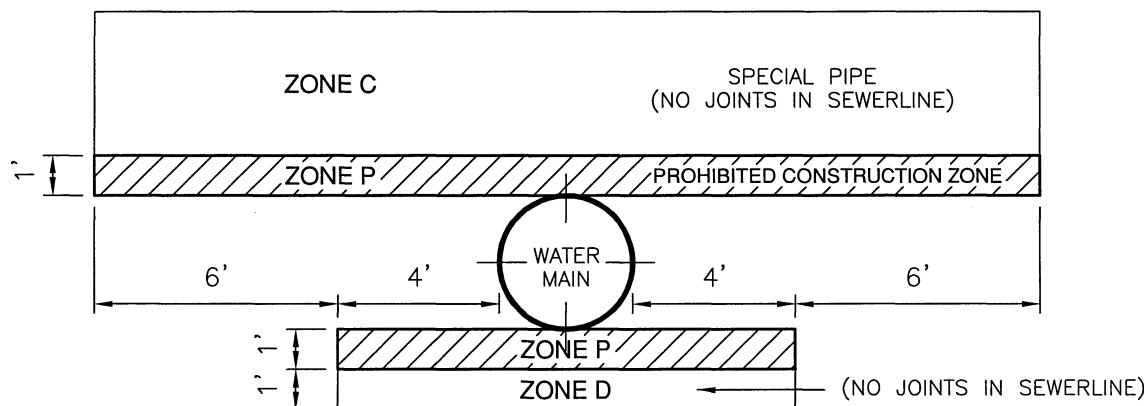


FIGURE 2 - CROSSINGS

MINIMUM SEPARATION REQUIREMENTS FOR WATER MAIN AND SEWER LINE CONSTRUCTION PER SECTION 64572 (WATER MAIN SEPARATION, CALIFORNIA WATERWORKS STANDARDS, TITLE 22, CALIFORNIA CODE OF REGULATIONS.)

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

WATER MAIN AND SANITARY SEWER  
SEPARATION  
CASE 1



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-015-1

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## INSTALLATION OF NEW WATER MAIN

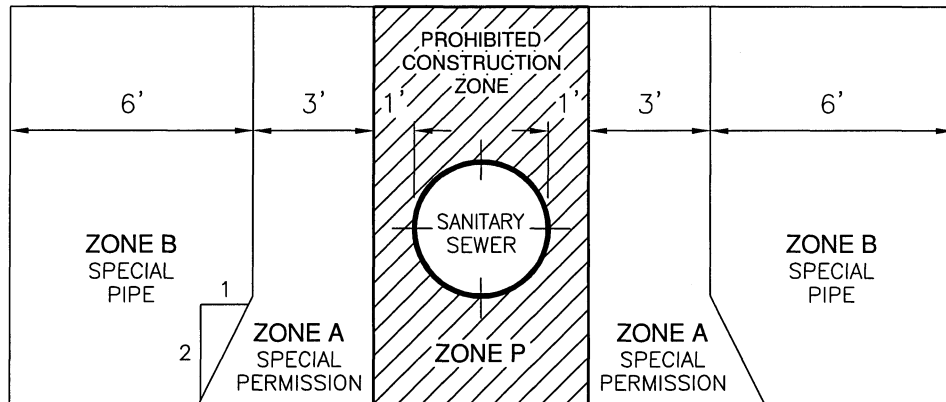


FIGURE 1 - PARALLEL CONSTRUCTION

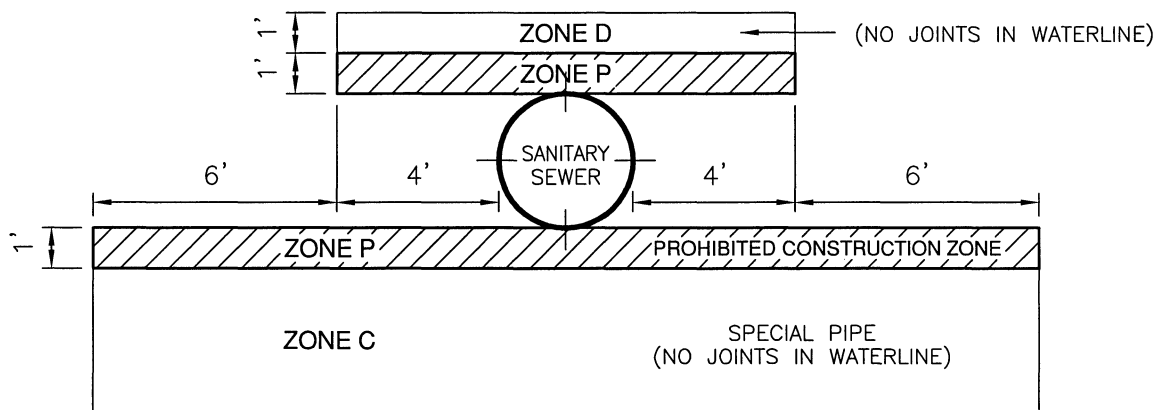


FIGURE 2 - CROSSINGS

### NEW WATER MAIN - EXISTING SANITARY SEWERLINE

MINIMUM SEPARATION REQUIREMENTS FOR WATER MAIN AND SEWERLINE CONSTRUCTION  
PER SECTION 64572 (WATER MAIN SEPARATION, CALIFORNIA WATERWORKS STANDARDS,  
TITLE 22, CALIFORNIA CODE OF REGULATIONS.)

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS



WATER MAIN AND SANITARY SEWER  
SEPARATION  
CASE 2



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-015-2

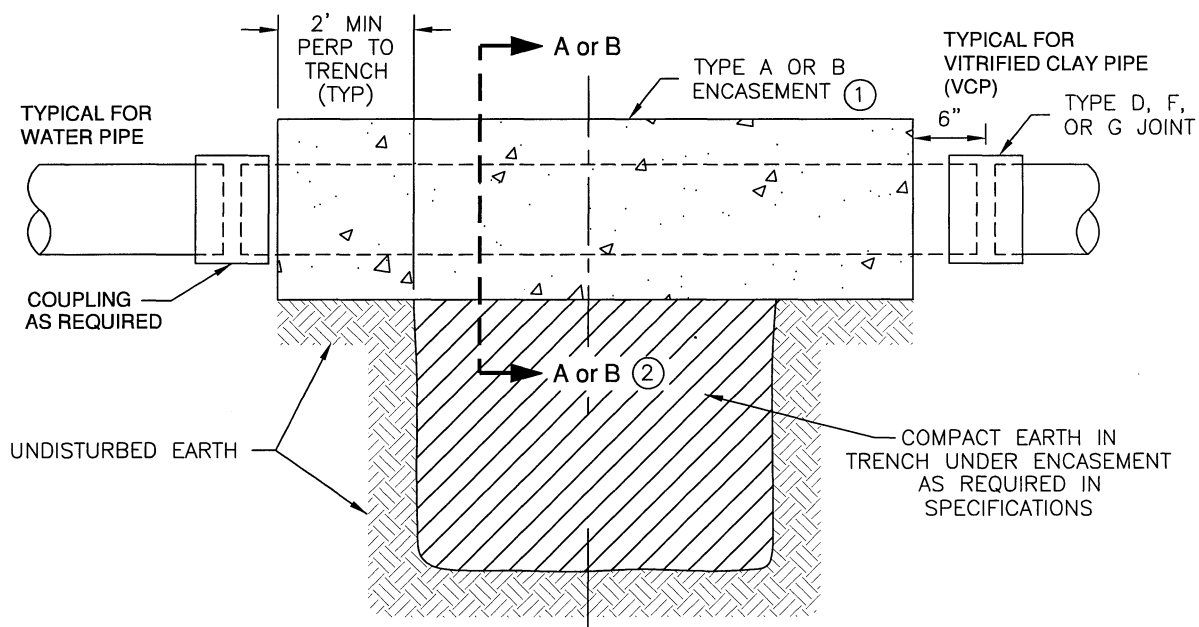
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<p style="text-align: center;">WATER DISTRIBUTION &amp; TRANSMISSION CONSTRUCTION METHODS</p>										<p style="text-align: center;">WATER MAIN AND SANITARY SEWER SEPARATION NOTES</p>																			
 CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING										DATE: MAR 2004										CWD-015-3									

### NOTES AND DEFINITIONS

1. HEALTH AGENCY -- THE DEPARTMENT OF HEALTH SERVICES. FOR THOSE WATER SYSTEMS SUPPLYING FEWER THAN 200 SERVICE CONNECTIONS, THE LOCAL HEALTH OFFICER SHALL ACT FOR THE DEPARTMENT OF HEALTH SERVICES.
2. WATER SUPPLIER -- "PERSON OPERATING A PUBLIC WATER SYSTEM" OR "SUPPLIER OF WATER" MEANS ANY PERSON WHO OWNS OR OPERATES A PUBLIC WATER SYSTEM.
3. LOW HEAD WATER MAIN -- ANY WATER MAIN WHICH HAS A PRESSURE OF FIVE PSI (POUNDS PER SQUARE INCH) OR LESS AT ANY TIME AT ANY POINT IN THE MAIN.
4. DIMENSIONS ARE FROM THE OUTSIDE OF WATER MAIN TO THE OUTSIDE OF SANITARY SEWER LINE OR MANHOLE.
5. COMPRESSION JOINT -- A PUSH-ON JOINT THAT SEALS BY MEANS OF THE COMPRESSION OF A RUBBER RING OR GASKET BETWEEN THE PIPE AND A BELL OR COUPLING.
6. MECHANICAL JOINTS -- BOLTED JOINTS.
7. RATED WORKING WATER PRESSURE OR PRESSURE CLASS -- A PIPE CLASSIFICATION SYSTEM BASED UPON INTERNAL WORKING PRESSURE OF THE FLUID IN THE PIPE, TYPE OF PIPE MATERIAL, AND THE THICKNESS OF THE PIPE WALL.
8. FUSED JOINT -- THE JOINING OF SECTIONS OF PIPE USING THERMAL OR CHEMICAL BONDING PROCESSES.
9. SLEEVE -- A PROTECTIVE TUBE OF STEEL WITH A WALL THICKNESS OF NOT LESS THAN ONE-FOURTH INCH INTO WHICH A PIPE IS INSERTED.
10. GROUND WATER -- SUBSURFACE WATER FOUND IN THE PART OF THE GROUND THAT IS WHOLLY SATURATED.
11. HOUSE LATERAL -- A SANITARY SEWER CONNECTING THE HOUSE LATERAL DRAIN, BUILDING DRAIN, AND THE MAIN SANITARY SEWERLINE.



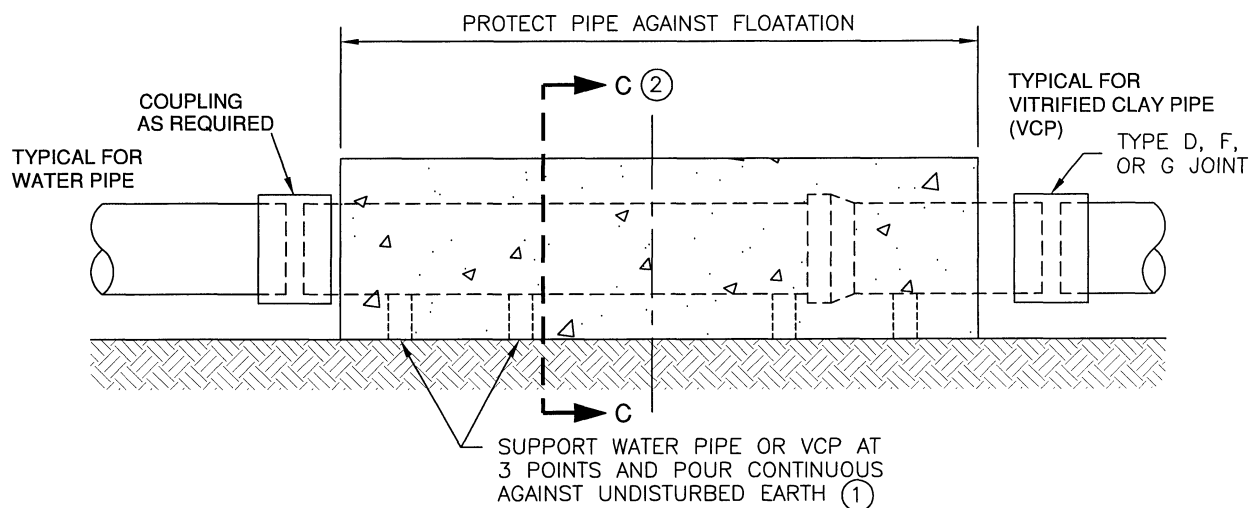
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**TYPE A OR B ENCASEMENT FOR WATER & SEWER**  
REQUIRED TO SPAN TRENCH, OR WHERE ENCASEMENT IS NOT POURED ON UNDISTURBED EARTH

NOTE:

- ① EXTEND MACHINED PIPE ENDS BEYOND ENCASEMENT
- ② SEE CWD-023-2 FOR CROSS-SECTION OF A, B, OR C ENCASEMENT DETAIL



**TYPE C ENCASEMENT FOR WATER & SEWER**

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

STRUCTURE INTERFERENCE  
TYPE A, B, OR C ENCASEMENT



OD = OUTSIDE DIAMETER OF BELL, COLLAR, OR COUPLING.

1/4" MIN WELDED STEEL CASING.

COMPACT EARTH AROUND ENCASEMENT AS REQUIRED ON PLANS & DETAIL SPECS

ID CASING =  $OD + 6"$

FILL ANNULAR SPACE WITH PER PLAN NOTES.

SEWER PIPE OR WATER PIPE

NOTE: SUPPORT AT LEAST 2' OF EACH END OF CASING ON UNDISTURBED EARTH.

**TYPE A - PIPE CASING  
SECTION A**

6" TYP ENCASEMENT ALL SIDES W/ PCC 560-C-3250

3" CLEAR TYP

SEWER PIPE OR WATER PIPE

#5 @ 6" MAX CONTINUOUS FOR LENGTH OF ENCASEMENT SUPPORT AT LEAST 2' OF EACH END OF ENCASEMENT ON UNDISTURBED EARTH. COMPACT EARTH AS REQUIRED ON PLANS & DETAIL SPECS.

**TYPE B - REINFORCED ENCASEMENT  
SECTION B**

6" TYP ENCASEMENT ALL SIDES W/ PCC 520-C-2500

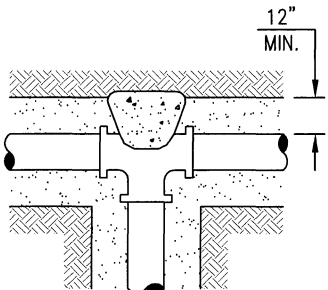
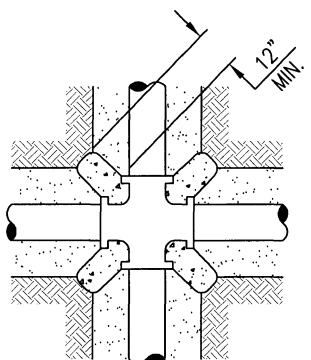
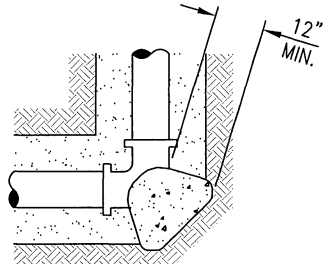
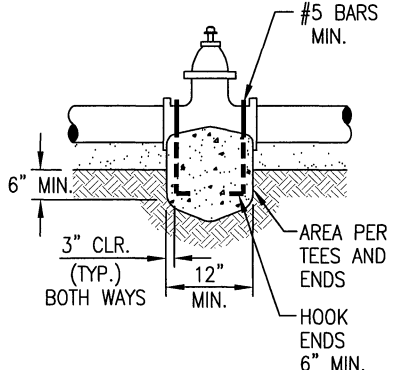
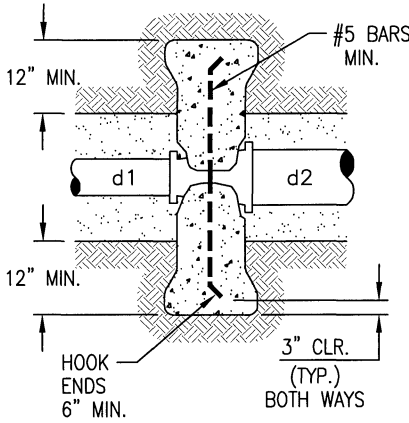
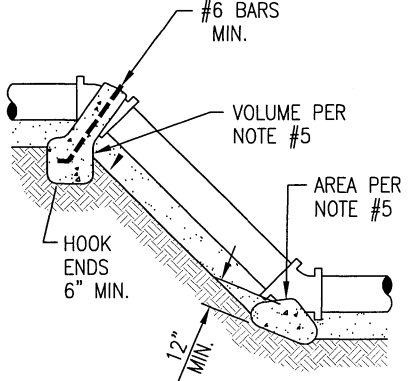
SEWER PIPE OR WATER PIPE (PROTECT PIPE AGAINST FLOATATION)

SUPPORT ON CONCRETE BLOCKS


POUR AGAINST UNDISTURBED EARTH

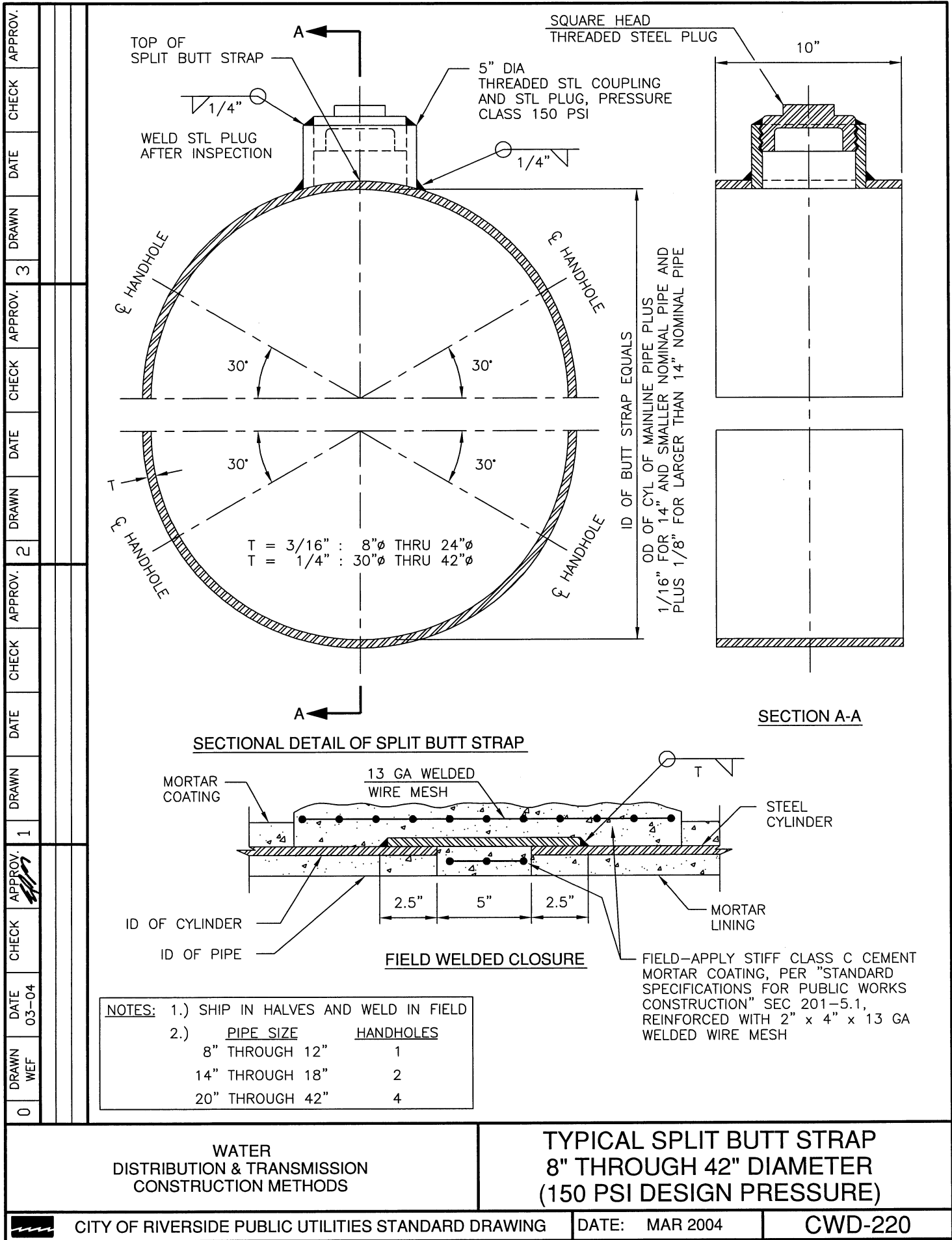
**TYPE C - PLAIN ENCASEMENT  
SECTION C**

The diagrams illustrate three methods of encasing a pipe. Type A shows a pipe with a welded steel casing, surrounded by compacted earth. Type B shows a pipe surrounded by a 6-inch thick concrete encasement with #5 reinforcement bars, supported by concrete blocks. Type C shows a pipe surrounded by a 6-inch thick plain concrete encasement, also supported by concrete blocks and poured against undisturbed earth.

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						 <p style="text-align: center;"><u>ANCHORAGE OF VALVE</u></p>	 <p style="text-align: center;"><u>REDUCER</u></p>	 <p style="text-align: center;"><u>VERTICAL P.I.</u></p>
						<p><u>GUIDELINE</u></p> <p><u>NOTES:</u></p> <ol style="list-style-type: none"> <li>1.) ALL MATERIALS OF CONSTRUCTION SHALL CONFORM TO "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION".</li> <li>2.) THRUST AND ANCHOR BLOCKS FOR D.I.P. AND M.L.&amp;C. STEEL PIPE SHALL BE OF PCC 450-C-2000 CONCRETE AND SHALL BE POURED AGAINST UNDISTURBED SOIL. CONCRETE SHALL BE KEPT CLEAR OF THE BELL END OF FITTINGS FOR DUCTILE IRON PIPE.</li> <li>3.) ENGINEERED-APPROVED RESTRAINED JOINTS MAY BE USED IN-LIEU OF THRUST BLOCKS.</li> <li>4.) ANCHOR BLOCK FOR GATE VALVES SHALL BE KEYED A MINIMUM OF 12 INCHES INTO TRENCH WALL AND 6 INCHES INTO BOTTOM OF TRENCH.</li> <li>5.) THE ENGINEER OF RECORD SHALL SIZE ALL THRUST BLOCKS ON THE BASIS OF THE SOIL PASSIVE PRESSURE.</li> </ol>		
						<div style="display: flex; justify-content: space-between;"> <div style="width: 45%; text-align: center;"> <p>WATER DISTRIBUTION &amp; TRANSMISSION CONSTRUCTION METHODS</p> </div> <div style="width: 45%; text-align: center;"> <p>THRUST BLOCK DETAILS TYPICAL</p> </div> </div>		

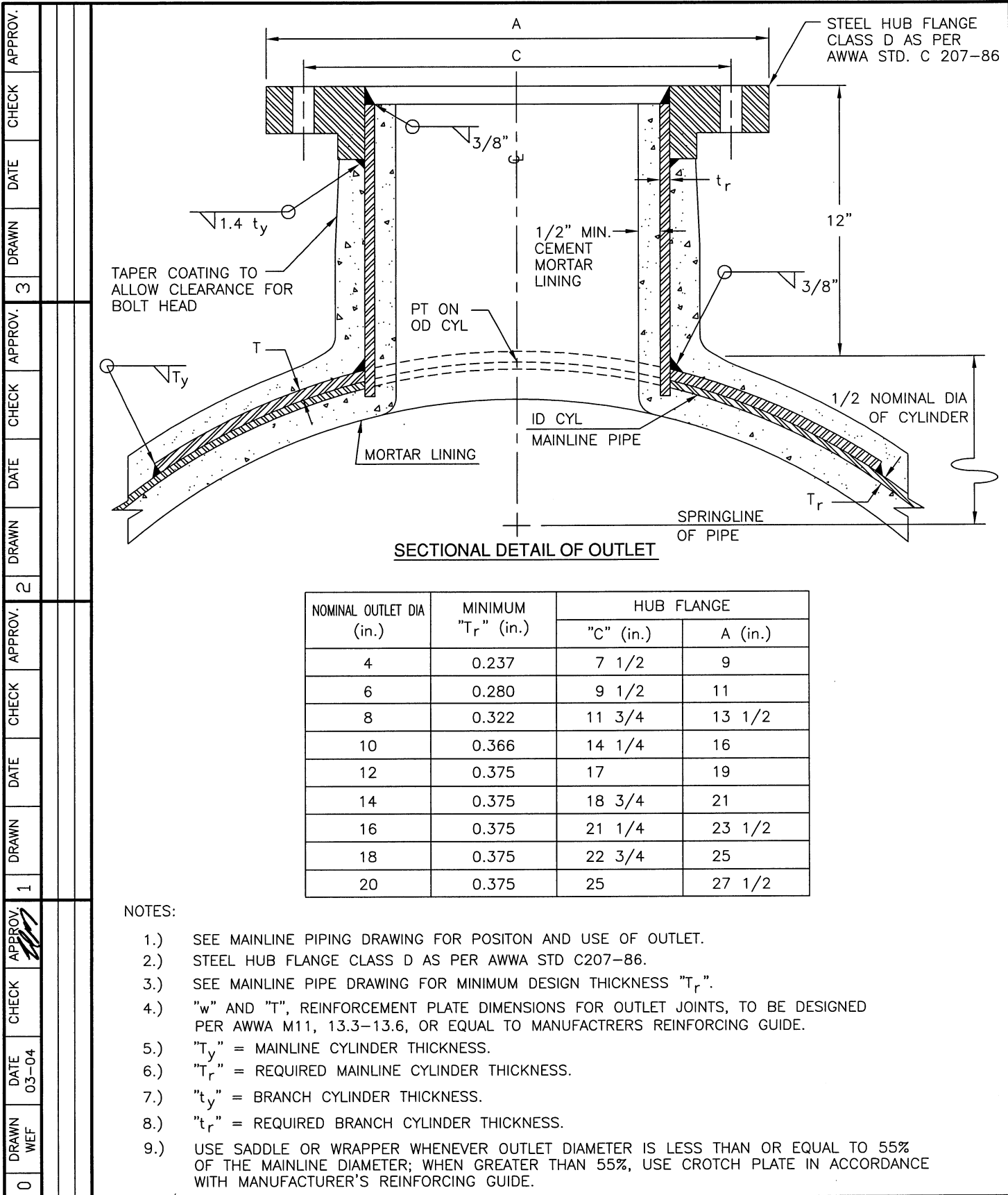


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<p><b>GENERAL NOTES:</b></p> <ol style="list-style-type: none"> <li>1.) MINIMUM TRENCH WIDTH = OD + 12" FOR 4" TO 12" NOMINAL DIAMETER PIPE AND OD + 18" FOR GREATER THAN 12" NOMINAL DIAMETER PIPE.</li> <li>2.) THE MATERIAL FOR BEDDING SHALL BE COHESIONLESS SANDY LOAM, SAND, OR SANDY GRAVEL MATERIAL OBTAINED FROM PROJECT EXCAVATION OR FROM APPROVED BORROW AREAS. THE BEDDING MATERIAL SHALL NOT CONTAIN ANY ROCKS OR OTHER MATERIAL DELETERIOUS TO THE PIPE.</li> <li>3.) SAND BEDDING SHALL BE USED WHEN THE SAND EQUIVALENT OF THE NATIVE MATERIAL IS LESS THAN 30, PER ASTM D2419.</li> <li>4.) FOR PAVED AND UNPAVED AREAS, THE COMPACTION OF BEDDING AND BACKFILL MATERIALS AND PAVEMENT REPLACEMENT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION "GREEN BOOK" LATEST EDITION.</li> <li>5.) COMPACTED BACKFILL MATERIAL IN THE UNPAVED AREAS SHALL COMPLY WITH THE SAME REQUIREMENTS AS THE BACKFILL MATERIAL COMPACTION IN THE STREETS.</li> <li>6.) THE BASE COURSE MATERIAL SHALL BE CRUSHED AGGREGATE BASE MATERIAL AS SPECIFIED IN SECTION 200-2 "UNTREATED BASE MATERIALS" OF THE CONSTRUCTION SPECIFICATIONS.</li> <li>7.) IF THE ENGINEER DETERMINES THAT THE SOIL UPON WHICH THE PIPE IS TO BE PLACED IS UNSTABLE, THE CONTRACTOR SHALL OVER-EXCAVATE THE BOTTOM OF THE TRENCH TO A DEPTH OF 12" OR AS DIRECTED BY THE ENGINEER AND PLACE A LAYER OF CRUSHED ROCK ON THE TRENCH SUBGRADE COMPACTED TO 90% RELATIVE COMPACTION.</li> <li>8.) THE BACKFILL AND PAVING SHALL COMPLY WITH THE CONSTRUCTION SPECIFICATIONS. THE BACKFILL AND PAVING MAY VARY ACCORDING TO AGENCY REQUIREMENTS.</li> </ol>																			
<p>WATER DISTRIBUTION &amp; TRANSMISSION CONSTRUCTION METHODS</p>										<p>TYPICAL PIPE TRENCH, BEDDING, BACKFILL AND PAVEMENT REQUIREMENTS (GENERAL NOTES)</p>									
 CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING										<p>DATE: MAR 2004</p>				<p>CWD-040-2</p>					



WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL SPLIT BUTT STRAP  
8" THROUGH 42" DIAMETER  
(150 PSI DESIGN PRESSURE)

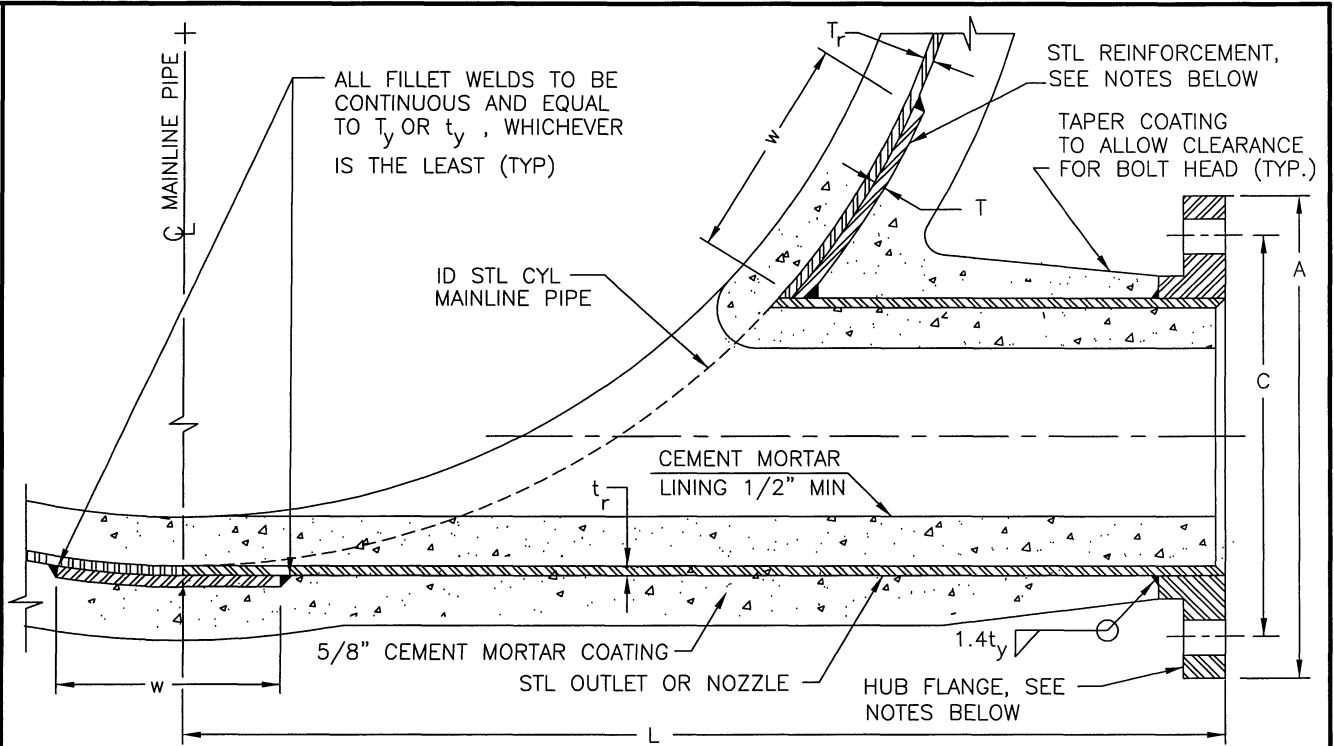


WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL FLANGED OUTLET  
4" THROUGH 20"



APPROV.	CHECK	DATE	DRAWN	APPROV.	CHECK	DATE	DRAWN
			3				
APPROV.	CHECK	DATE	DRAWN	APPROV.	CHECK	DATE	DRAWN
			2				
APPROV.	CHECK	DATE	DRAWN	APPROV.	CHECK	DATE	DRAWN
			1				
APPROV.	CHECK	DATE	DRAWN	APPROV.	CHECK	DATE	DRAWN
		03-04	0				



**SECTIONAL DETAIL OF OUTLET**

NOMINAL OUTLET DIA (in)	MINIMUM "t <sub>r</sub> " (in)	HUB FLANGE	
		"C" (in)	"A" (in)
4	0.237	7 1/2	9
6	0.280	9 1/2	11
8	0.322	11 3/4	13 1/2
10	0.366	14 1/4	16
12	0.375	17	19

**NOTES:**

- 1.) SEE MAINLINE PIPING DRAWING FOR POSITION AND USE OF OUTLET.
- 2.) STEEL HUB FLANGE CLASS D AS PER AWWA STD. C207-86.
- 3.) SEE MAINLINE PIPING DRAWING FOR MINIMUM DESIGN THICKNESS "t<sub>r</sub>".
- 4.) "w" AND "T", REINFORCEMENT PLATE DIMENSIONS FOR OUTLET JOINTS, TO BE DESIGNED PER AWWA MII, 13.3-13.6, OR EQUAL TO MANUFACTURERS REINFORCING GUIDE.
- 5.) "t<sub>y</sub>" = MAINLINE CYLINDER THICKNESS.
- 6.) "t<sub>r</sub>" = REQUIRED MAINLINE CYLINDER THICKNESS.
- 7.) "t<sub>y</sub>" = BRANCH CYLINDER THICKNESS.
- 8.) "t<sub>r</sub>" = REQUIRED BRANCH CYLINDER THICKNESS.
- 9.) "L" =  $\frac{\text{NOMINAL DIA}}{2} + 12"$

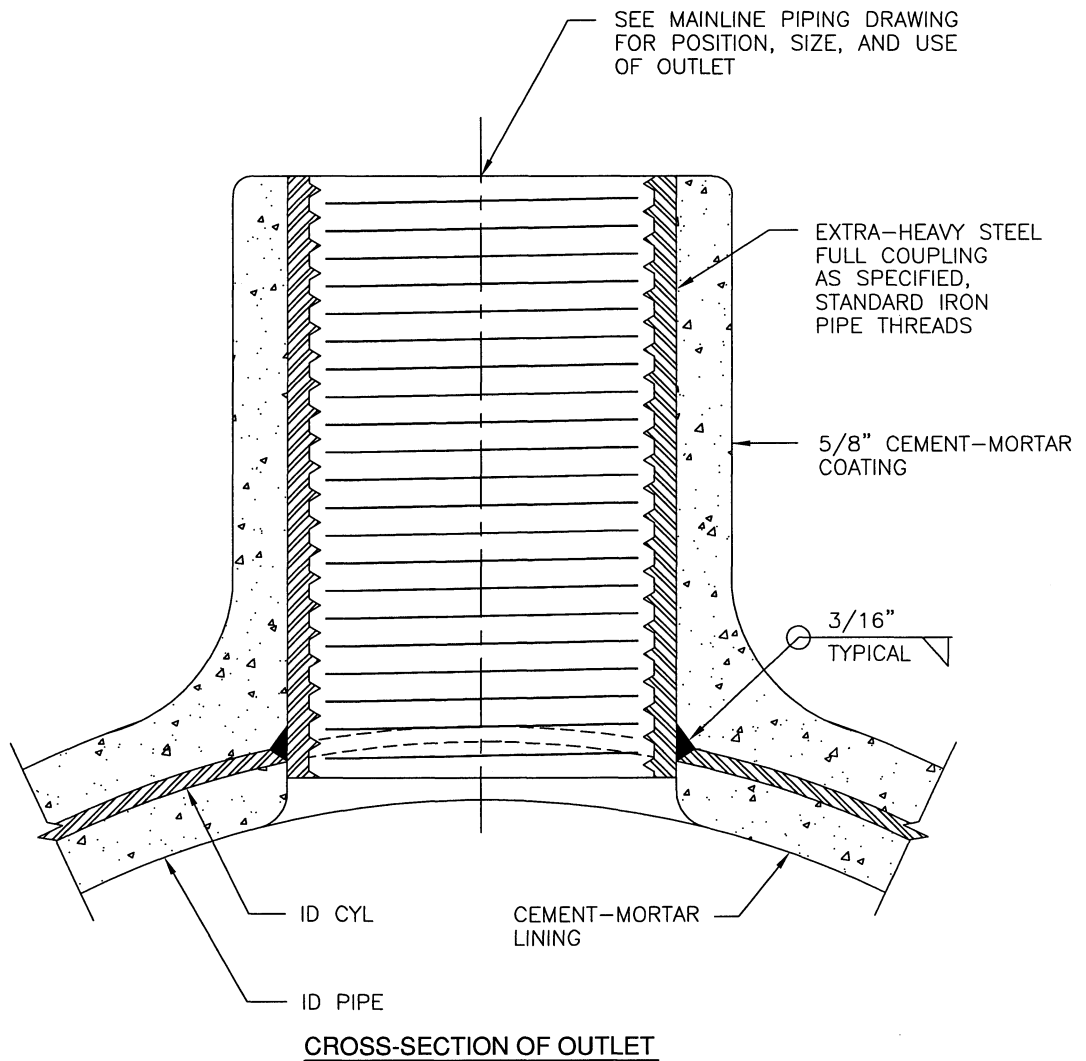
WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

**TYPICAL FLANGED TANGENT OUTLET  
4" THROUGH 12" DIAMETER**





0	DRAWN	WEF	DATE	03-04	CHECK	APPROV.	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL THREADED OUTLET  
1" THRU 2 1/2" DIAMETER



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

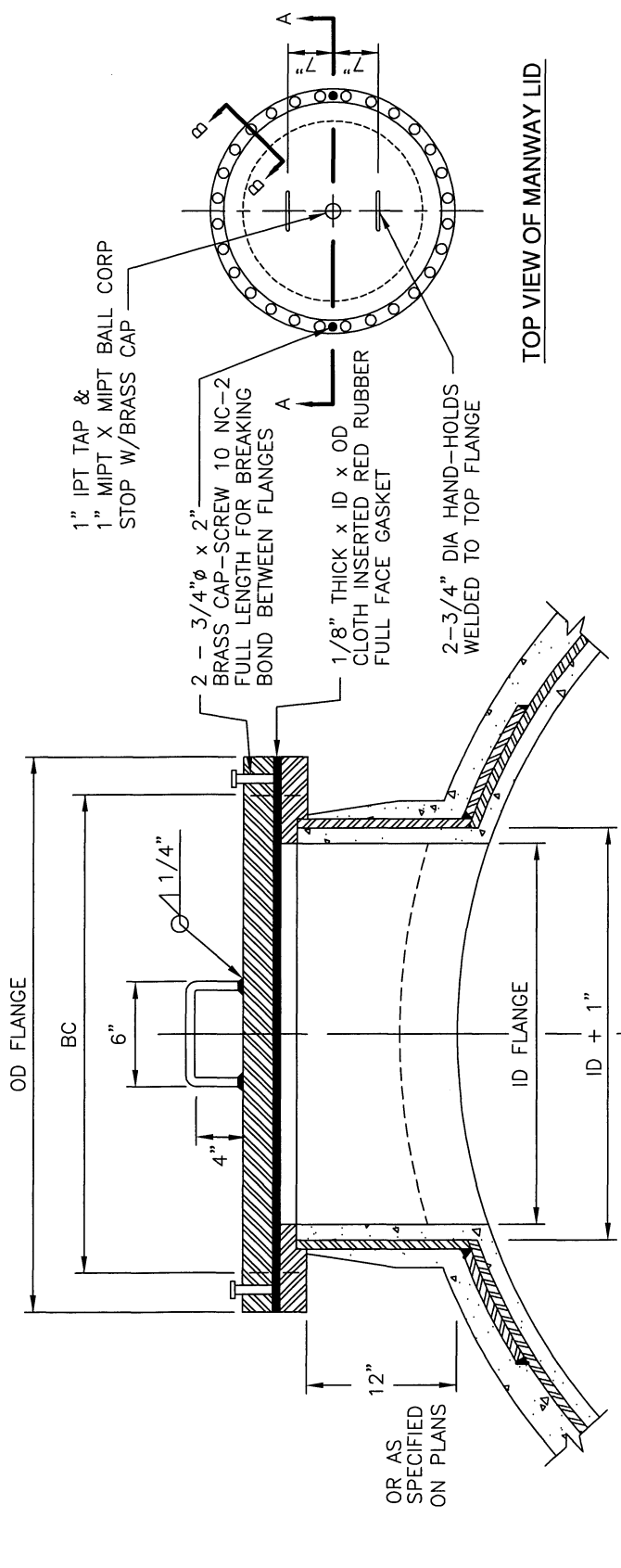
DATE: MAR 2004

CWD-340

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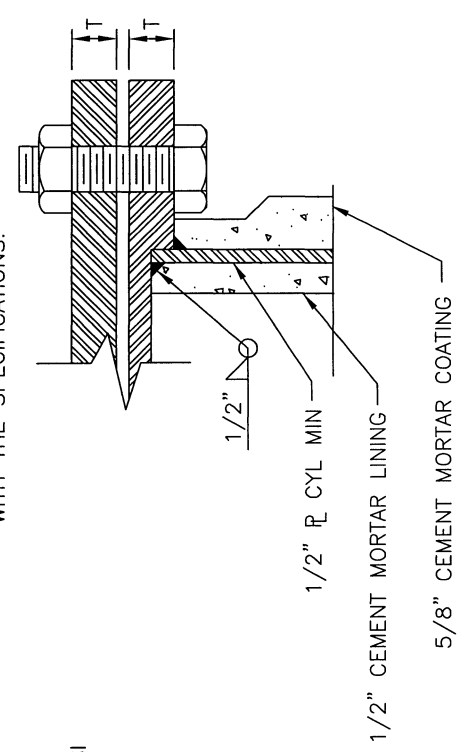
WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL MANWAY FOR LARGE  
PIPELINES



CROSS-SECTION OF MANWAY A-A

HEX HEAD NUTS AND BOLTS IN ACCORDANCE WITH THE SPECIFICATIONS.



CROSS SECTION OF BOLT ASSEMBLY B-B

- NOTES:
- 1.) PAINT ALL EXPOSED INTERIOR & EXTERIOR METAL SURFACES OF FLANGES, EXCEPT GASKET SURFACE, PER SPECIFICATIONS.
  - 2.) 150 LB. HUB FLANGES SHALL BE USED IF WORKING PRESSURE 175 PSI OR LESS, 300 LB. FLANGES SHALL BE USED IF WORKING PRESSURE OVER 175 PSI.
  - 3.) REINFORCE MANWAY IN ACCORDANCE WITH AWWA M11 OR EQUAL, MANUFACTURER'S REINFORCING GUIDE.
  - 4.) MANWAY STATIONS MAY BE VARIED IN ORDER TO LOCATE THE 24" DIA OPENING @ MIDPOINT IN INDIVIDUAL PIPE LENGTHS THUS PERMITTING THE MANUFACTURE OF A UNIVERSAL PIPE LENGTH.
  - 5.) PAINT UNDERSIDE OF BLIND FLANGE WITH EPOXY PER SPECIFICATIONS.

ID	FLANGE OD	BC	T	BOLT DIA	NO. BOLTS	PIPE SIZE
24"	32"	29 1/2"	1 1/4"	1 1/4"	20	24" TO 30"
30"	38 3/4"	36"	1 3/8"	1 1/4"	28	36" & LARGER

10' MIN DISTANCE

18"

HYDRANT HEAD ① OR ②

3" MIN  
6" MAX

FINISH GRADE

AC PVMT

⑦

⑤

"V" DIMENSION  
ADD 1' CTF  
HOLD BACK COATING 18"  
SHIP FLANGE LOOSE

WELD JOINT (TYP)

ANCHOR BLOCK  
4 CU FT

ADD 2' CTF  
HOLD BACK COATING 2'-6"

BEARING BLOCK  
PER CWD-030

SHIP LOOSE ⑨

SHIP LOOSE ⑨

SHIP LOOSE ⑨

SHIP LOOSE ⑨

SHIP LOOSE ⑨

WATER MAIN

NOMINAL OD  
2 + 12"

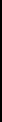
"H" DIMENSION

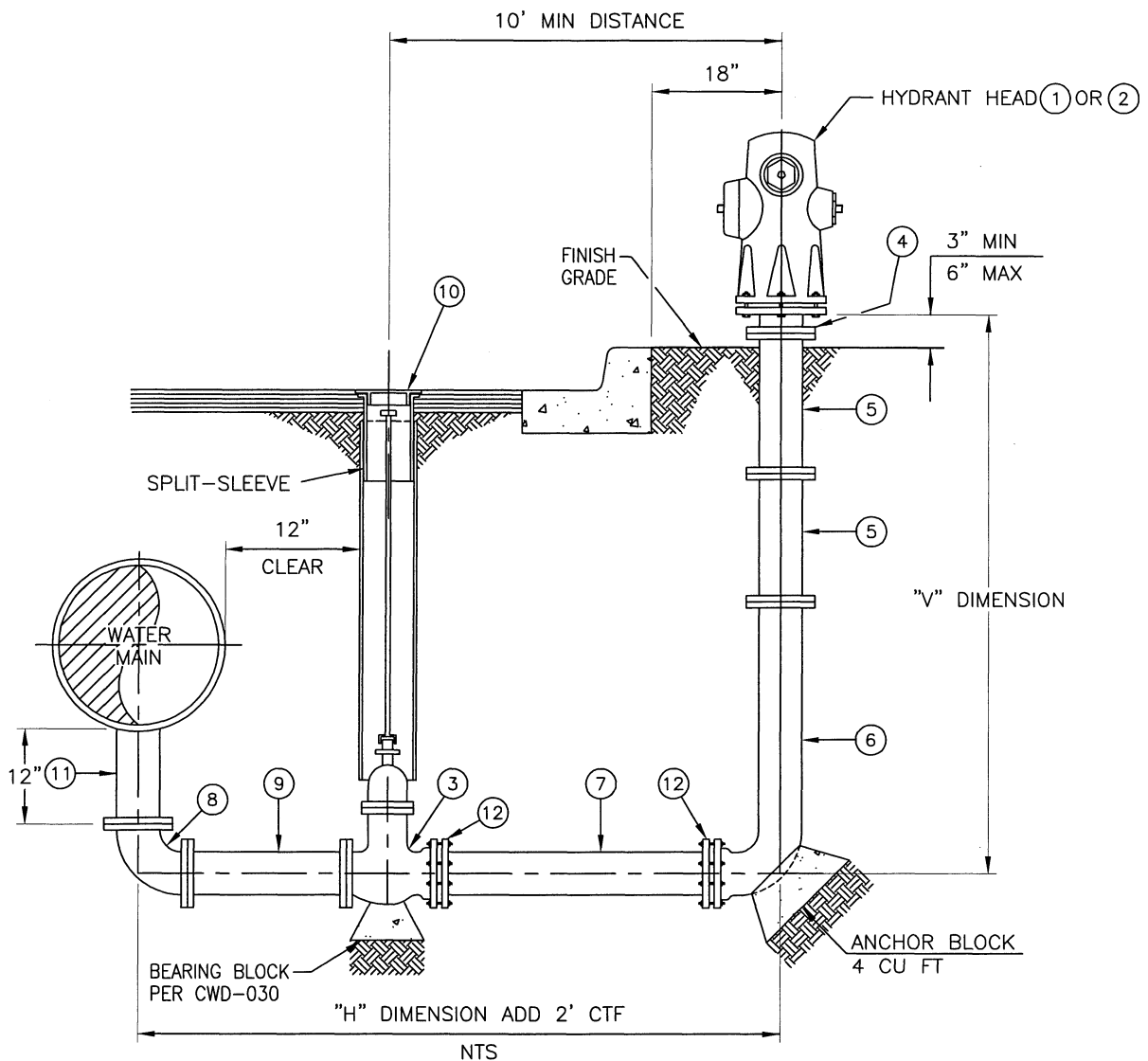
NOTES:

- 1.) STANDARD OR SUPER HYDRANT PER PLANS AND SPECIFICATIONS.
- 2.) BREAK-OFF BOLTS REQUIRED BETWEEN HYDRANT AND FLANGE PER SPECIFICATION.
- 3.) HYDRANT OUTLETS SHALL FACE STREET.
- 4.) TOP OF HYDRANT BLOW-OFF TO BE PAINTED BLUE #315-15 BY FULLER O'BRIEN CO. OR DEPARTMENT APPROVED EQUAL.
- 5.) WELD ALL NON-MECHANICAL JOINTS.
- 6.) "H" AND "V" DIMENSION AS SHOWN ON PLANS

① HOLD BACK COATING 6"

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① STANDARD HYDRANT : 1- 2 1/2", 1- 4"	1	CWD-700
② SUPER HYDRANT : 2 - 2 1/2", 1 - 4"	1	CWD-700
③ 6" FLANGED RW GATE VALVE	1	CWD-500
④ 6" SLIP-ON WELD FLANGE (6-HOLE)	1	
⑤ 6" ML&C STEEL PIPE 10 GA, 6 5/8" OD 1/2 CML, 3/4" CMC	1	
⑥ DELETED		
⑦ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
⑧ 6" 90° ELL	2	
⑨ 6" FLANGE	3	
⑩ 6" FLANGED OUTLET	1	CWD-300

0	DRAWN WEF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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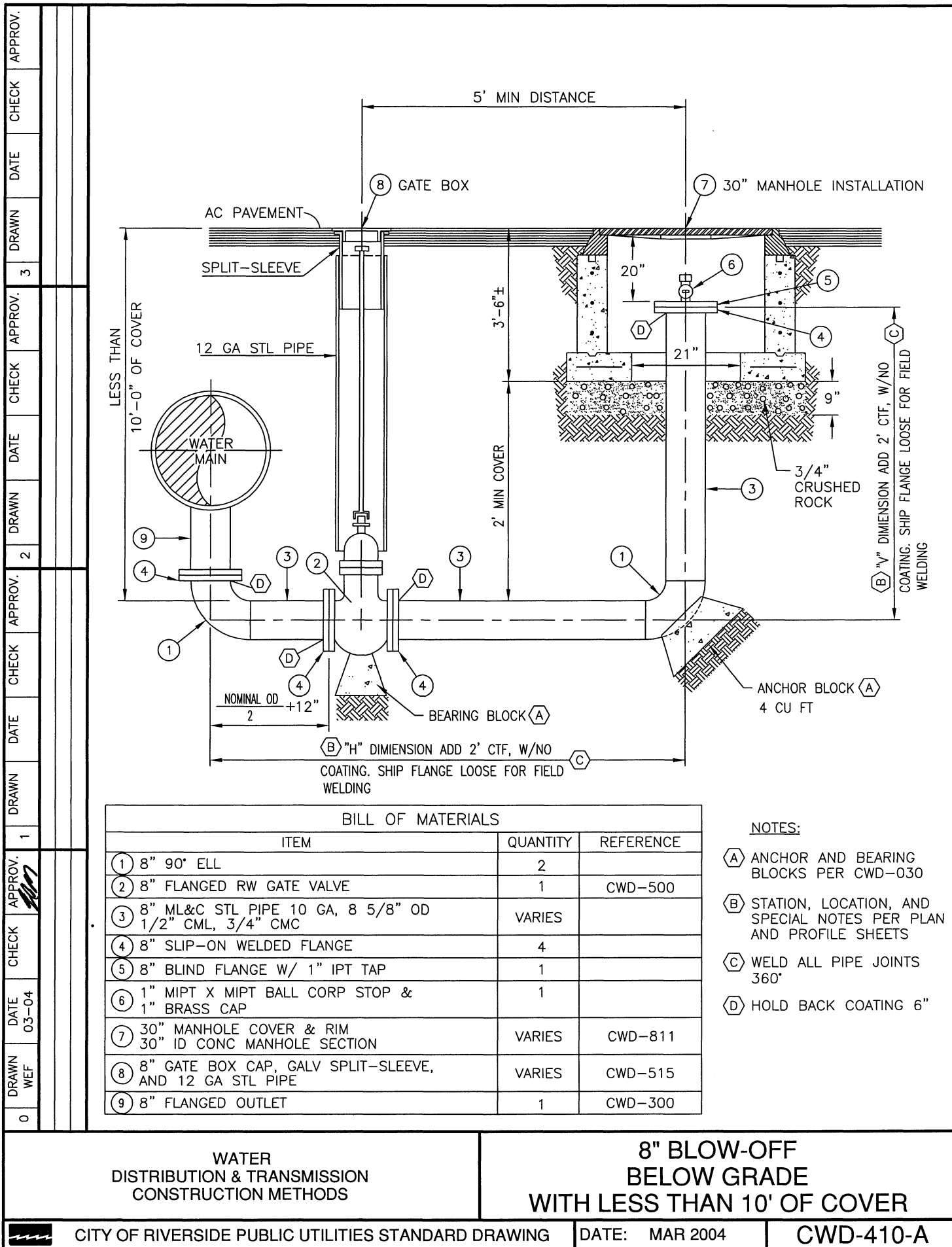
BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① STANDARD HYDRANT : 1 - 2 1/2 ", 1 - 4"	1	CWD-700
② SUPER HYDRANT : 2 - 2 1/2", 1 - 4"	1	CWD-700
③ 6" FLG x MJ RW GATE VALVE	1	CWD-500
④ 6" x 4" FLANGED ADAPTER, 8 HOLE TO 6 HOLE	1	
⑤ 6" x 18" DI SPOOL FLG x FLG AS REQUIRED		
⑥ 6" x 48" DI BURY FLG x MJ	1	
⑦ 6" DI PIPE AS REQUIRED (RESTRAIN ALL JOINTS)		
⑧ 6" FLANGED 90° ELL (LONG RADIUS)	1	
⑨ 6" x 12" DI SPOOL FLG x FLG AS REQUIRED		
⑩ 8" GATE BOX CAP, GALV SPLIT-SLEEVE, 12 GA STL PIPE	1	CWD-515
⑪ 6" FLANGED OUTLET	1	CWD-300
⑫ 6" GRIP RING KIT	2	

NOTES:

- 1.) STANDARD OR SUPER HYDRANT PER PLANS AND SPECIFICATIONS.
- 2.) BLOW-OFF BOLTS REQUIRED BETWEEN HYDRANT AND FLANGE. INSTALL PER SPECIFICATIONS.
- 3.) HYDRANT HEAD OUTLETS SHALL FACE STREET.
- 4.) TOP OF HYDRANT HEAD BLOW-OFF TO BE PAINTED BLUE #315-15 BY FULLER O'BRIEN CO. OR DEPARTMENT APPROVED EQUAL.
- 5.) "H" AND "V" DIMENSION AS SHOWN ON PLAN.


## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

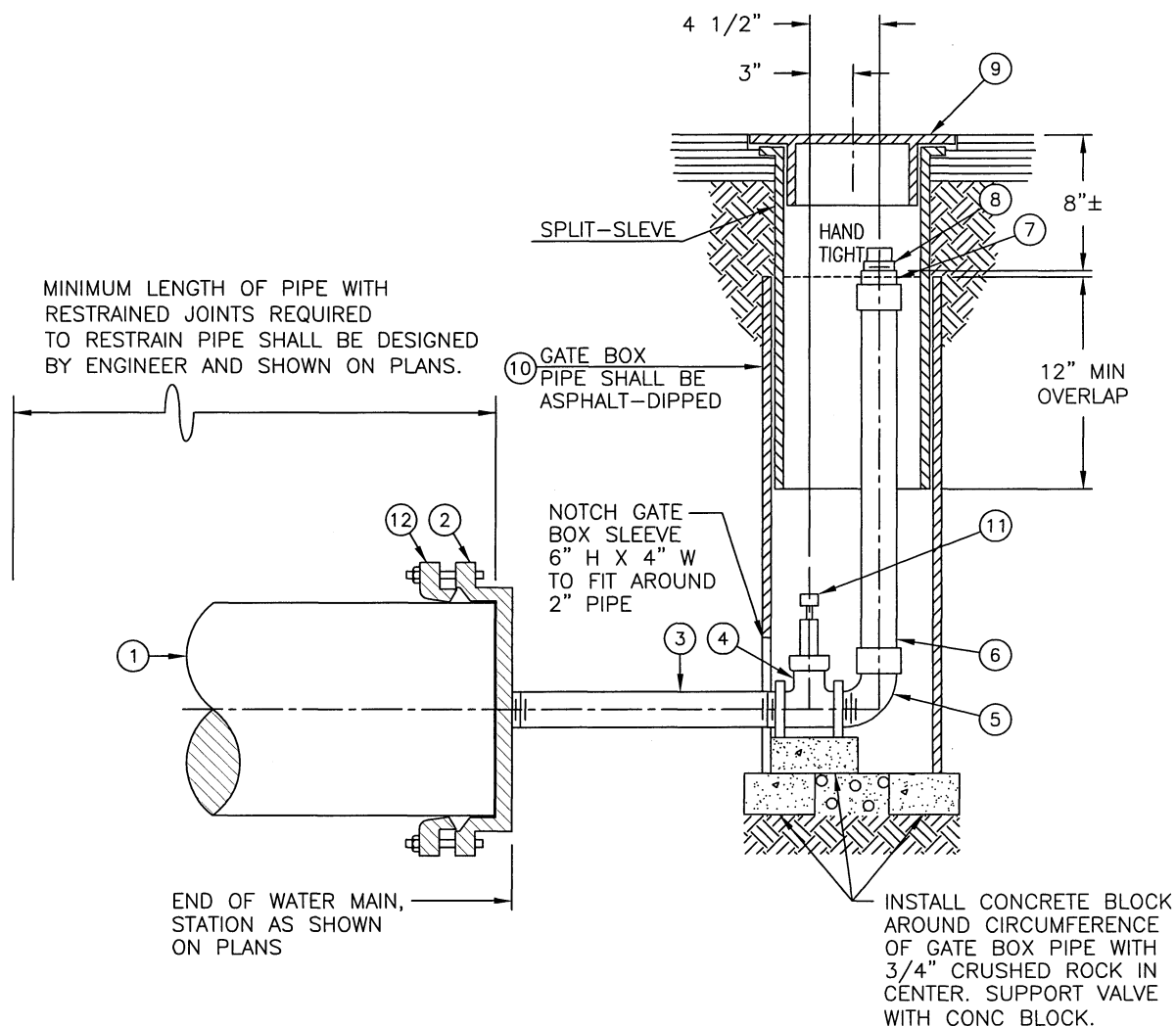
6" HYDRANT HEAD BLOW-OFF  
DI BURY  
24" MAIN AND SMALLER



NOTES:

- (A) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS
- (B) WELD ALL PIPE JOINTS 360°
- (C) HOLD BACK COATING 6"

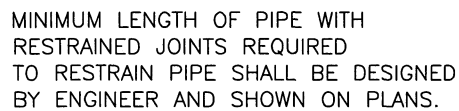
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BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 4" THROUGH 12" MAIN	1	PER PLAN
② MAIN SIZE MJ CAP W/ 2" TAP IPF	1	PER PLAN
③ 2" x 12" BRASS NIPPLE	1	
④ 2" BRONZE VALVE, IPF, PER SPEC	1	
⑤ 2" 90° ELL SW x IPM	1	
⑥ 2" x 30"± COPPER PIPE, HARD, NO JOINTS	VARIABLE	
⑦ 2" ADAPTER SW x IPF	1	
⑧ 2" BRASS PLUG, IPM	1	
⑨ 10" GATE BOX CAP AND SPLIT SLEEVE	1	CWD-515
⑩ 10" DIA, 12 GA, STEEL PIPE	VARIABLE	
⑪ 1" SQ NUT FOR 2" VALVE AS REQUIRED	1	SUPPLIED BY CITY
⑫ MAIN SIZE GRIP RING KIT	1	

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

TYPICAL 2" BLOW-OFF ASSEMBLY  
FOR MAINS WITH LESS THAN  
42" OF COVER

[illegible]

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 4" THROUGH 12" MAIN	1	PER PLAN
② MAIN SIZE MJ CAP WITH 2" TAP IPF	1	PER PLAN
③ 2" ADAPTER IPM x SW	1	
④ 2" X 12" COPPER PIPE, SOFT	1	
⑤ 2" 90° ELL SW x SW	1	
⑥ 2" COPPER PIPE, HARD DRAWN	VARIABLE	
⑦ 2" 90° BRASS ELL IPM x SW	2	
⑧ 2" BRONZE VALVE, FIPT, PER SPEC	1	
⑨ 2" COPPER PIPE, HARD (NO JOINTS)	VARIABLE	
⑩ 2" ADAPTER SW x IPF	1	
⑪ 2" BRASS PLUG IPM	1	
⑫ 10" GATE BOX CAP & SPLIT SLEEVE	1	CWD-515
⑬ 10" DIA STEEL SLEEVE (VARIES)	VARIABLE	
⑭ 1" SQ NUT FOR 2" VALVE AS REQUIRED	1	SUPPLIED BY CITY
⑮ MAIN SIZE GRIP RING KIT	1	

CWD-411-B



MINIMUM LENGTH OF PIPE WITH RESTRAINED JOINTS REQUIRED TO RESTRAIN PIPE SHALL BE DESIGNED BY ENGINEER AND SHOWN ON PLANS.

24" MIN.

TEMPORARY RISER

TEMPORARY BOX AND LID 10" MIN DIA

3/4 INCH CRUSHED ROCK

NOTCH GATE BOX 6"H x 4"W SLEEVE TO FIT AROUND 2" PIPE

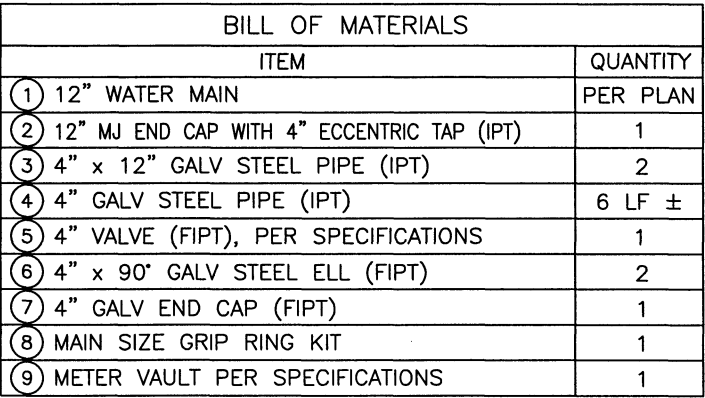
END OF WATER MAIN, STATION AS SHOWN ON PLANS

BILL OF MATERIALS	
	QUANTITY
1 6" THROUGH 10" WATER MAIN	PER PLAN
2 MJ END CAP WITH 2" TAP	1
3 2" GALV 90° STREET ELL (IPT)	2
4 2" GATE (IPT)	1
5 2" GALV COUPLING (IPT)	1
6 2" x 30"± GALV PIPE (IPT)	1
7 2" x 24"± GALV PIPE (IPT)	1
8 2" IPF x 2 1/2" MHT BUSHING	1
9 2 1/2" HOSE CAP	1
10 2" x 12"± GALV NIPPLE (IPT)	1
11 MAIN SIZE GRIP RING KIT	1

**NOTES:**

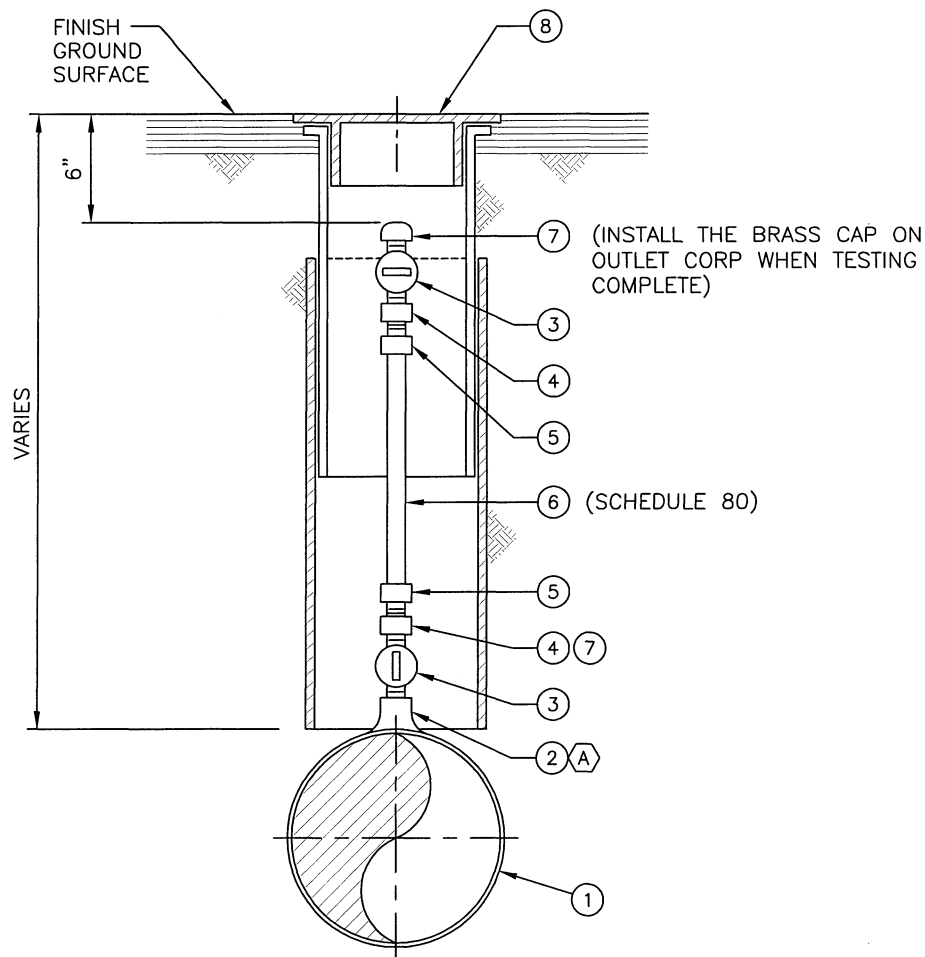
1.) CONTRACTOR SHALL LEAVE END CAP IN PLACE UNTIL FINAL CONNECTION BY CITY FORCES

6" THROUGH 10"  
TEMPORARY CONSTRUCTION END CAPS  
FOR FLUSHING, TESTING, & CHLORINATION

[illegible]

**CWD-413**

0	DRAWN	WEF	DATE	03-04	CHECK	APPROV.	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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BILL OF MATERIALS		
	QUANTITY	REF
① ML&C STEEL OR DIP WATER MAIN	PER PLAN	
② 1" THREADED OUTLET	1	CWD-340
③ 1" MIPT x MIPT BALL CORP STOP	2	
④ 1" GALV STEEL COUPLING	2	
⑤ 1" PVC ADAPTER	2	
⑥ 1" PVC PIPE	VARIES	
⑦ 1" BRASS CAP	1	
⑧ 10" GATE BOX AND SPLIT-SLEEVE	1	CWD-515

NOTES:

- 1.) CONTRACTOR SHALL REMOVE VALVE BOX, CLOSE AND CAP 1" BALL CORP STOP, AND REMOVE PVC RISER FOLLOWING ACCEPTANCE OF THE TRANSMISSION MAIN.
- 2.) STATION, LOCATION AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.

(A) DOUBLE-STRAP SERVICE SADDLES SHALL BE USED ON ALL DIP CONNECTIONS

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TEMPORARY  
WATER SAMPLER



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

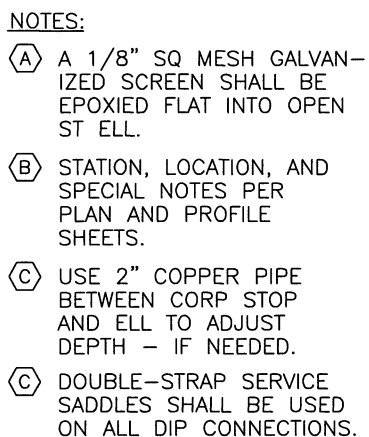
DATE: MAR 2004

CWD-432

**PLAN VIEW**  
NOT TO SCALE

**SECTION A-A**  
NOT TO SCALE

BILL OF MATERIALS	
ITEM	QUANTITY
① WATER SAMPLER HOUSING	1
② 1" COPPER TUBING (SEE DWG)	1
③ 3/4" COPPER TUBING	1
④ 3/4" BALL VALVE	1
⑤ 3/4" MPT x CTS ADAPTER	1
⑥ 3/4" x 3" NIPPLE	1
⑦ 1" ANGLE METER STOP	1
⑧ 1" x 3/4" METER ADAPTER	1
⑨ 3/4" MPT x S/W ADAPTER	1
⑩ 1/4" MPT x CTS ADAPTER	1
⑪ 1/2" x 1/4" BRASS BUSHING	1
⑫ 3/4" x 1/2" BRASS BUSHING	1
⑬ 1/4" COPPER TUBING (12" MIN)	1
⑭ METER BOX, BROOKS 37	1
⑮ NO. 3 REBAR	1

[illegible]

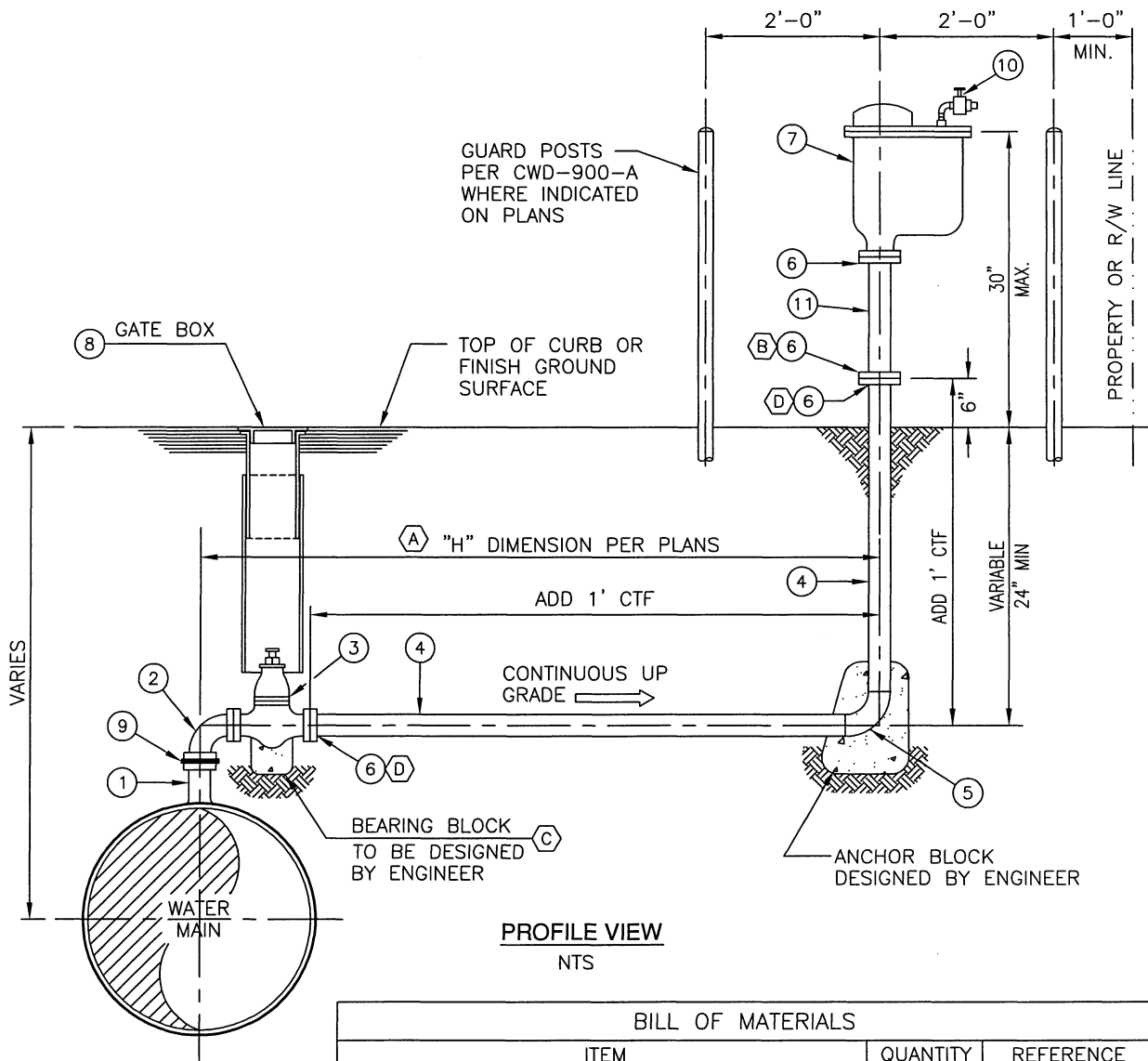
BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 2" IPT OUTLET	1	CWD-340
② 2" BRONZE MIPTxMIPT BALL CORP STOP	1	
③ 2" BRASS STREET ELL	1	
④ 2" TYPE K COPPER PIPE (SOFT)	VARIABLE	
⑤ 2" SW x IPM BRONZE ADAPTER	1	
⑥ 2" BRONZE GATE VALVE NRS	1	CWD-500
⑦ 2" SW x SW 90° ELL	1	
⑧ 2" HARD DRAWN COPPER PIPE, TYPE K	VARIABLE	
⑨ 2" UNIVERSAL AIR VALVE	1	
⑩ 2" GALV STREET ELL - SEE NOTE A	2	
⑪ 8" GATE VALVE CAP, GALV SPLIT SLEEVE, & 12 GA STL PIPE	1	CWD-515
⑫ 1/4" BRASS GATE VALVE, 1/4" BRASS PLUG, 1/4" x 2" BRASS NIPPLE, 1/4" BRASS STREET ELL	1 EA	
⑬ 2"ø x 6" NIPPLE	1 EA	
⑭ 2" SW x IPF BRONZE ADAPTER	1 EA	

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

## TYPICAL 2" AIR VALVE INSTALLATION



0	DRAWN	WEF
DATE	03-04	
CHECK		
APPROV.		
1	DRAWN	
DATE		
CHECK		
APPROV.		
2	DRAWN	
DATE		
CHECK		
APPROV.		
3	DRAWN	
DATE		
CHECK		
APPROV.		



**NOTES:**

- (A) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.
- (B) BREAK-OFF BOLTS, CADMIUM-PLATED OR GALVANIZED. INSTALL WITH NUT ON TOP AND COUNTER-BORE, PACKED WITH SILICONE.
- (C) BEARING BLOCK SHALL NOT REST ON MAIN AND SHALL BE NOTCHED ON BOTH SIDES PER CWD-500
- (D) HOLD BACK COATING 18"

**BILL OF MATERIALS**

ITEM	QUANTITY	REFERENCE
(1) 6" FLANGED OUTLET	1	CWD-300
(2) 6" 90° ELL F/F	1	
(3) 6" RW GATE VALVE F/F	1	CWD-500
(4) 6" ML&C STL PIPE, 10 GA 6" ID, 5/16" CML, 3/4" CMC	VARIABLE	
(5) 6" - 90° WELD ELL	1	
(6) 6" WELD FLANGE, SHIP FLG LOOSE	6	
(7) 6" COMBINATION AIR VALVE, PER SPEC	1	
(8) 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
(9) FLANGE INSULATION KIT AS REQUIRED PER SPECIFICATIONS	1	
(10) 1/2" BRASS GV, 1/2" x 2" BRASS NIPPLE, 1/2" BRASS STREET ELL, 1/2" BRASS PLUG	1 EA	
(11) 6" DIA X 12" STL SPOOL, PE X PE, ML & NO COATING	1	

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL 6" AIR VALVE  
INSTALLATION



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWINGS

DATE: MAR 2004

CWD-462

**PROFILE VIEW**  
NTS

**BILL OF MATERIALS**

ITEM	QUANTITY	REFERENCE
(1) 8" FLANGED OUTLET	1	CWD-300
(2) 8" 90° ELL F x F	1	
(3) 8" RW GATE VALVE F x F	1	CWD-500
(4) 8" ML&C STL PIPE, 10 GA 8" ID, 5/16" CML, 3/4" CMC	VARIABLE	
(5) 8" - 90° WELD ELL	1	
(6) 8" WELD FLANGE, SHIP LOOSE	6	
(7) 8" COMBINATION AIR VALVE, PER SPEC	1	
(8) 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
(9) FLANGE INSULATION KIT AS REQUIRED PER SPECIFICATIONS	1	
(10) 1/2" BRASS GV 1/2" x 2" BRASS NIPPLE, 1/2" BRASS STREET ELL, 1/2" BRASS PLUG	1 EA	
(11) 8" DIA X 12" STL SPOOL, PE X PE, ML & NO COATING	1	

**NOTES:**

(A) STATION, LOCATION, AND SPECIAL NOTES PER PLAN AND PROFILE SHEETS.

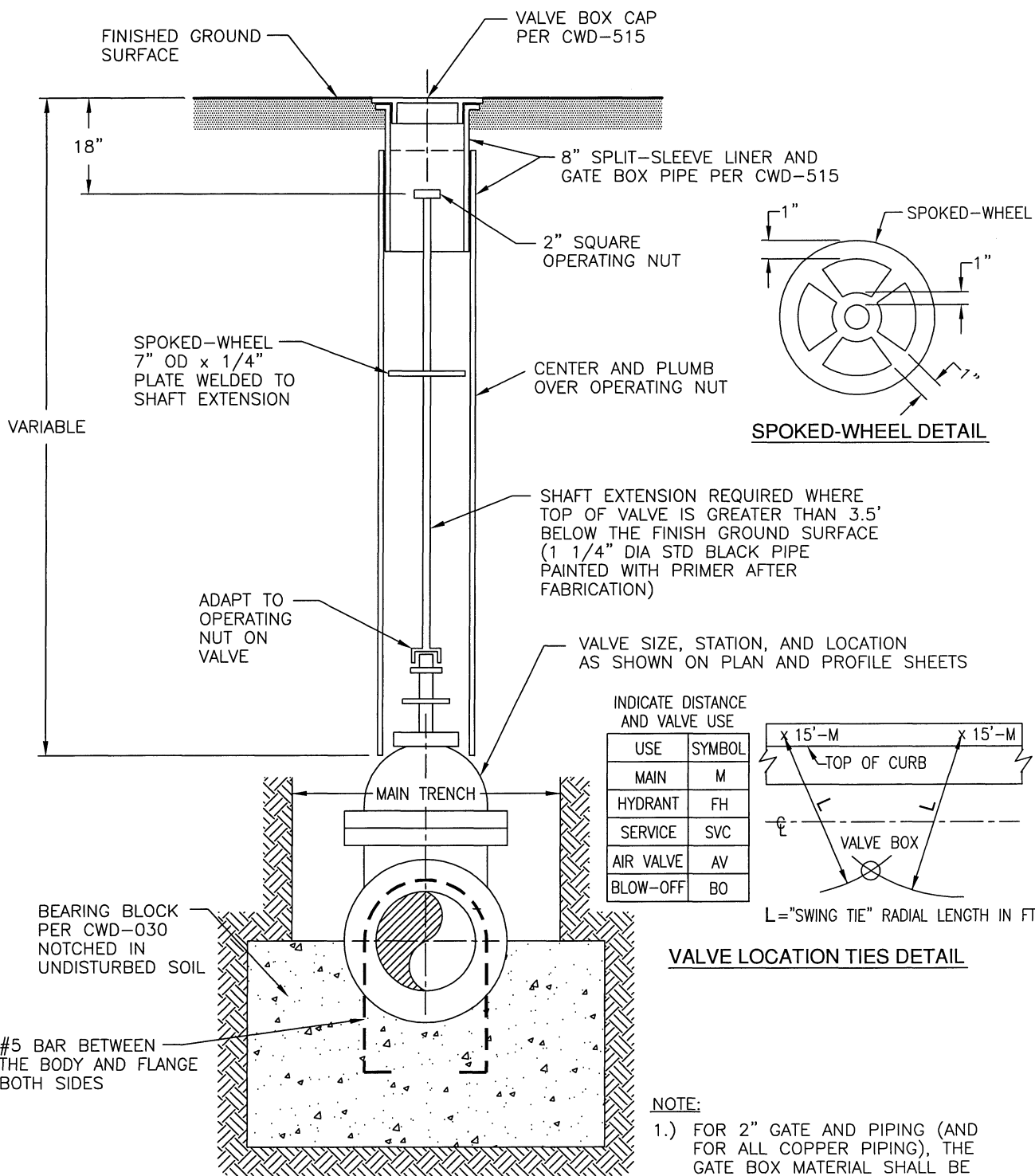
(B) BREAK-OFF BOLTS, CADMIUM-PLATED OR GALVANIZED. INSTALL WITH NUT ON TOP AND COUNTER-BORE, PACKED WITH SILICONE.

(C) BEARING BLOCK SHALL NOT REST ON MAIN AND SHALL BE NOTCHED ON BOTH SIDES PER CWD-500

(D) HOLD BACK COATING 18".



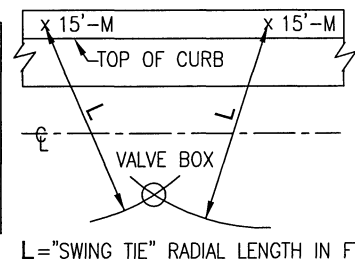
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 DRAWN \_\_\_\_\_  
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 APPROV. \_\_\_\_\_  
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 DRAWN \_\_\_\_\_  
 2  
 APPROV. \_\_\_\_\_  
 CHECK \_\_\_\_\_  
 DATE \_\_\_\_\_  
 DRAWN \_\_\_\_\_  
 1  
 APPROV. \_\_\_\_\_  
 CHECK \_\_\_\_\_  
 DATE 03-04  
 DRAWN WEF  
 0



**SPOKED-WHEEL DETAIL**

INDICATE DISTANCE AND VALVE USE

USE	SYMBOL
MAIN	M
HYDRANT	FH
SERVICE	SVC
AIR VALVE	AV
BLOW-OFF	BO



**VALVE LOCATION TIES DETAIL**

**VALVE BOX SECTIONAL DETAIL**

**NOTE:**

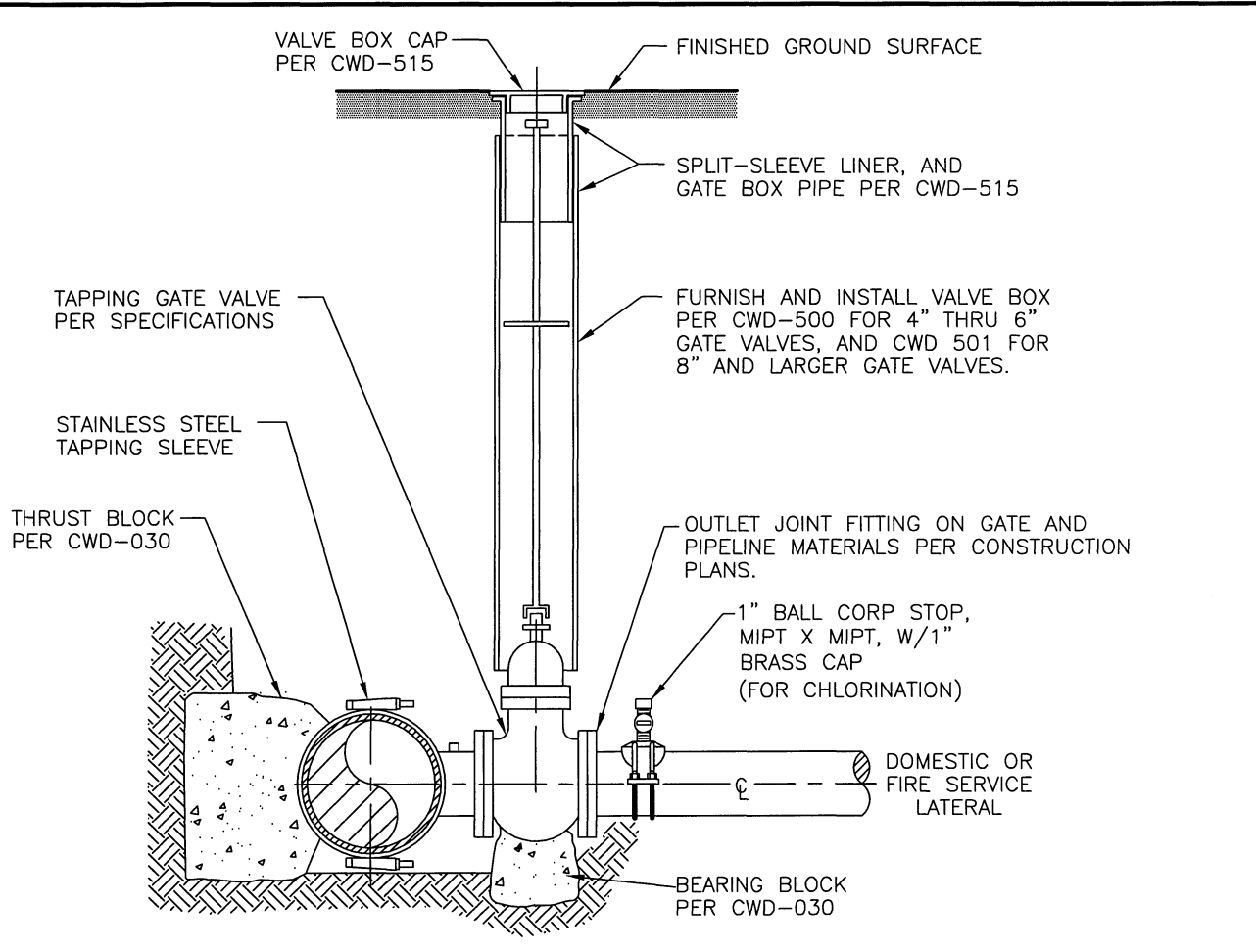
- 1.) FOR 2" GATE AND PIPING (AND FOR ALL COPPER PIPING), THE GATE BOX MATERIAL SHALL BE NOTCHED AND BLOCKED TO CLEAR SAME.
- 2.) GATE VALVES ARE TO BE INSTALLED IN THE VERTICAL POSITION UNLESS THEY ARE DESIGNED TO OPERATE IN OTHER POSITIONS.

WATER  
 DISTRIBUTION & TRANSMISSION  
 CONSTRUCTION METHODS

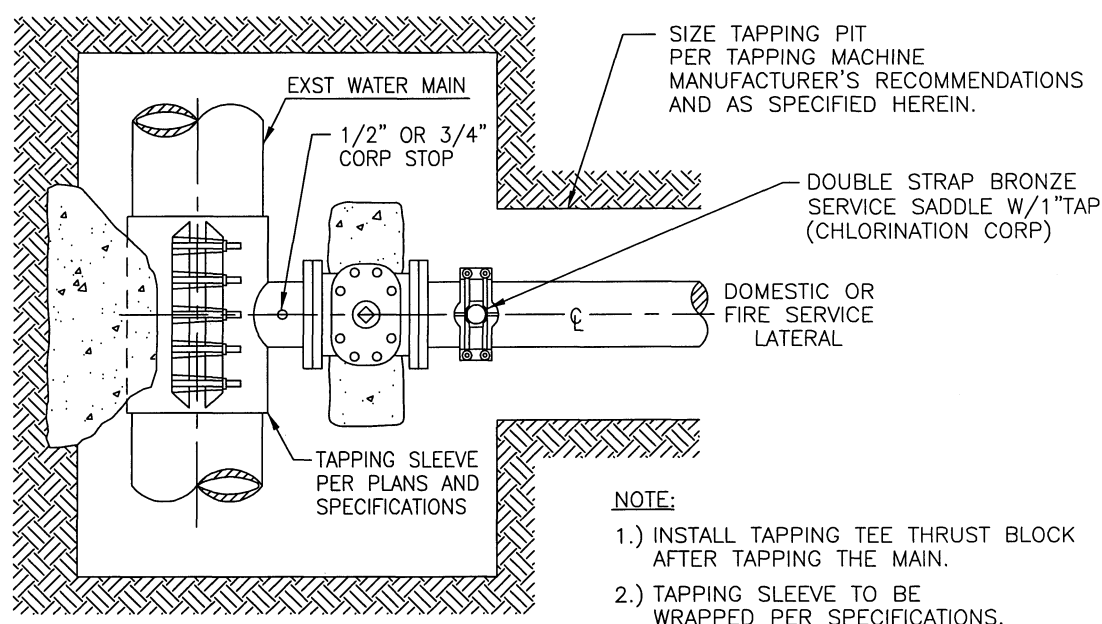
TYPICAL VALVE BOX  
 FOR GATE VALVES



APPROV.	CHECK	DATE	DRAWN	3	APPROV.	CHECK	DATE	DRAWN	2	APPROV.	CHECK	DATE	DRAWN	1	APPROV.	CHECK	DATE	DRAWN	0



**SECTIONAL VIEW**



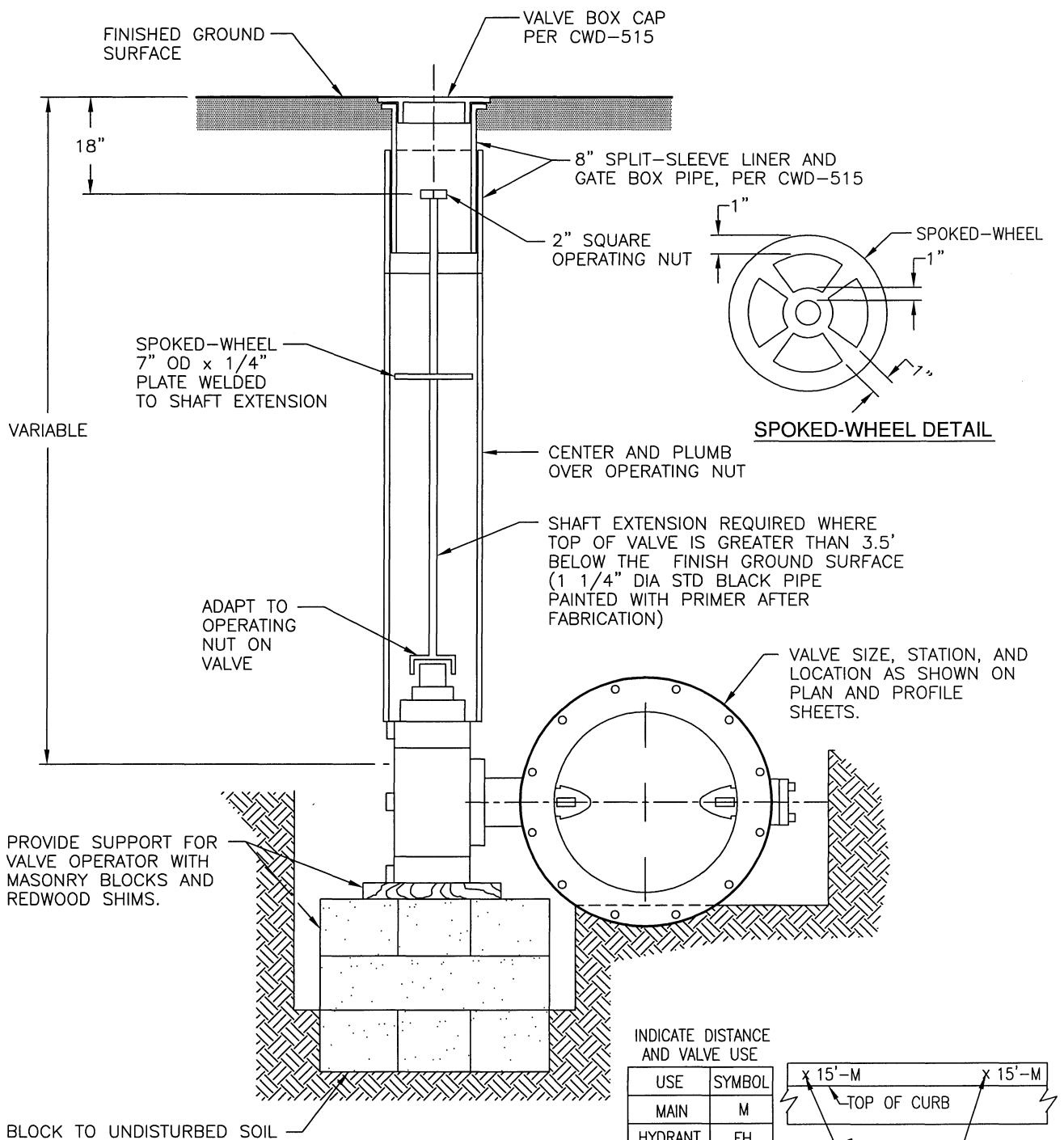
**PLAN VIEW**

- NOTE:**
- 1.) INSTALL TAPPING TEE THRUST BLOCK AFTER TAPPING THE MAIN.
  - 2.) TAPPING SLEEVE TO BE WRAPPED PER SPECIFICATIONS.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

## TAPPING SLEEVE AND TAPPING VALVE DETAIL FOR DOMESTIC AND FIRE SERVICES

APPROV.	
CHECK	
DATE	
DRAWN	
3	
APPROV.	
CHECK	
DATE	
DRAWN	
2	
APPROV.	
CHECK	
DATE	
DRAWN	
1	
APPROV.	
CHECK	
DATE	
DRAWN	
0	
DATE	03-04
DRAWN	WEF



**SECTIONAL VIEW**

**VALVE LOCATION TIES DETAIL**

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

TYPICAL VALVE BOX  
FOR BUTTERFLY VALVES

8" AND 10" CAPS MANUFACTURED BY SOUTH BAY FOUNDRY, SAN DIEGO, CA OR APPROVED EQUAL. CAP MARKED "CWD", PAINTED PER SPECIFICATION

DRILL 1/4" HOLE, 3/8" INSIDE INTERIOR RING ON CAP SURFACE. INSTALL 1/4" x 1 1/2" BRASS ROUND-HEAD SCREW, SECURE WITH A 1/4" BRASS NUT. ADD AN ADDITIONAL 1/4" BRASS NUT AND WASHER TO THE 1/4" BRASS SCREW TO FACILITATE FUTURE VALVE TAG.

AC PAVEMENT

VALVE BOX

ADJUST CAP FLUSH TO 1/4" HIGH ABOVE FINISH STREET GRADE

7"

12" MIN OVERLAP

VARIABLE LENGTH

10" OD x 12 GA STL PIPE, ASPHALT-DIPPED

8" OD x 12 GA STL PIPE, ASPHALT-DIPPED

COMPACT PAVEMENT UNDER GATE CAP FLANGE AND SPLIT-SLEEVE LINER WHEN SETTING OR ADJUSTING

SPLIT-SLEEVE LINER

VALVE BOX

**VALVE BOX LINER SPECIFICATIONS:**

20 GA x 18" LONG GALV STL SPLIT-SLEEVE WITH 1 1/2" OVERLAP AND 1/2" LIP (FLARE) ON ONE END.

OD FOR 8" VALVE BOX = 7 3/4"

OD FOR 10" VALVE BOX = 9 3/4"

DRILL 1/4" HOLE

3/8"

**TYPICAL VALVE BOX CAP**

**SECTIONAL DETAIL**

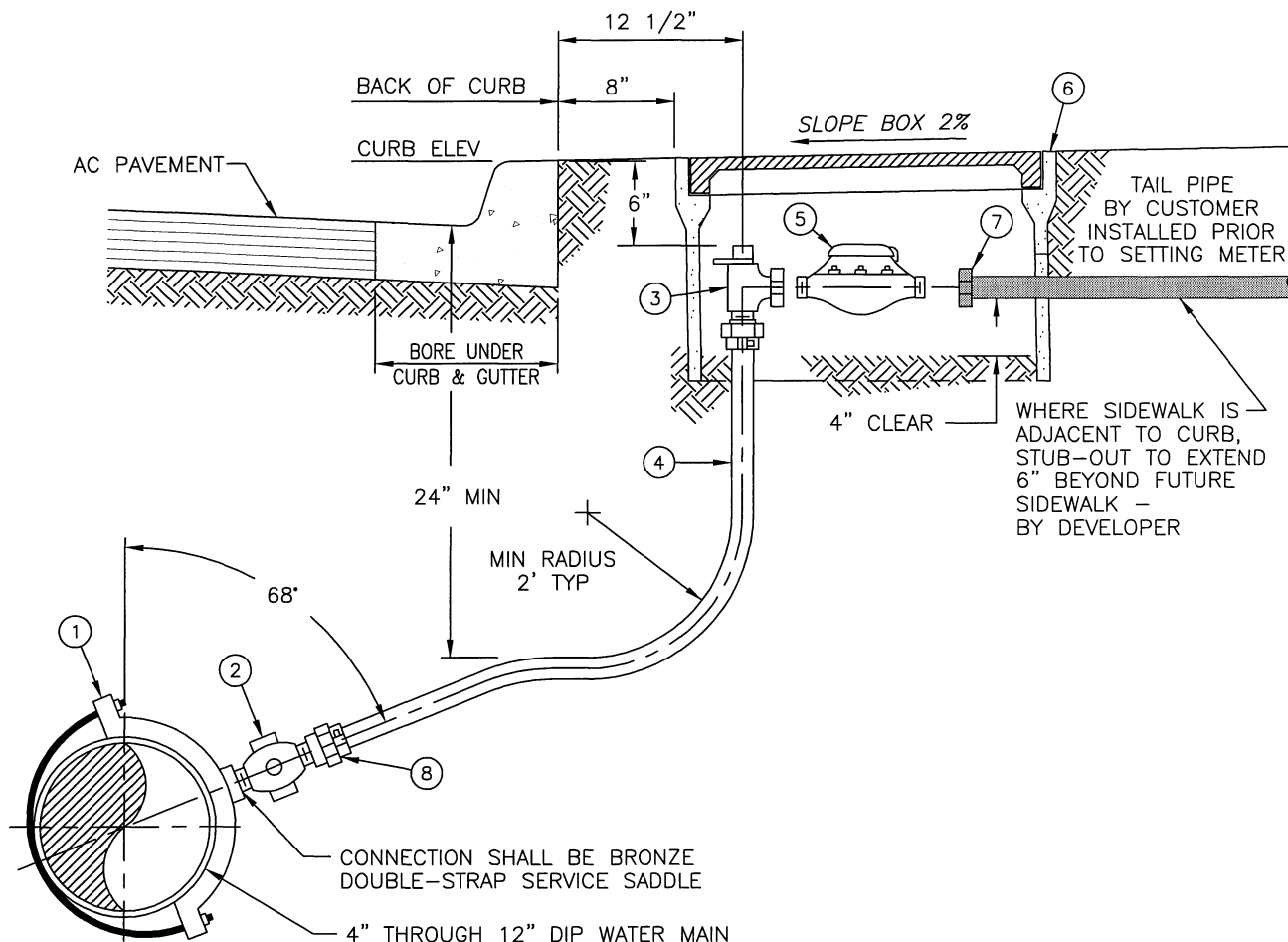
**NOTES:**

1.) THIS STANDARD IS TO BE USED IN CONJUNCTION WITH STANDARD DRAWINGS CWD-500, CWD-504, AND CWD-510.

### TYPICAL SPLIT-SLEEVE LINER AND CAP FOR 8" AND 10" VALVE BOX




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### TYPICAL STREET INSTALLATION

BILL OF MATERIALS	
ITEM	QUANTITY
① BRONZE DOUBLE-STRAP SERVICE SADDLE (IPT)	1
② 1" BRONZE MIPT x MIPT BALL CORP STOP	1
③ ANGLE BALL METER STOP COMPRESSION x METER COUPLING (WITH 1" x 3/4" ADAPTER FOR 3/4" METER) PER SPECIFICATIONS	1
④ 1" TUBING, SOFT COPPER, TYPE K)	VARIES
⑤ METER INSTALLED BY CITY FORCES	
⑥ METER BOX PER SPECIFICATIONS AND/OR PLANS.	1
⑦ 1" OR 3/4" COUPLINGS	
⑧ 1" FIPT x COMPRESSION ADAPTOR	1

#### NOTES:

- 1.) METER BOX COVER TO BE CAST IRON WHERE BOX IS IN ALLEY OR DRIVEWAY.
- 2.) CONTRACTOR SHALL INSTALL METER BOXES WITH READING HOLE AT TIME ANGLE METER STOPS ARE INSTALLED.
- 3.) CITY WILL FURNISH A TEMPORARY SERVICE METER JUMPER, PRIOR TO INSTALLING METER, UPON PAYMENT OF FEES.
- 4.) METER BOX TO BE CLEANED BEFORE NEW METER CAN BE INSTALLED BY CITY FORCES.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS


1-INCH WATER SERVICE

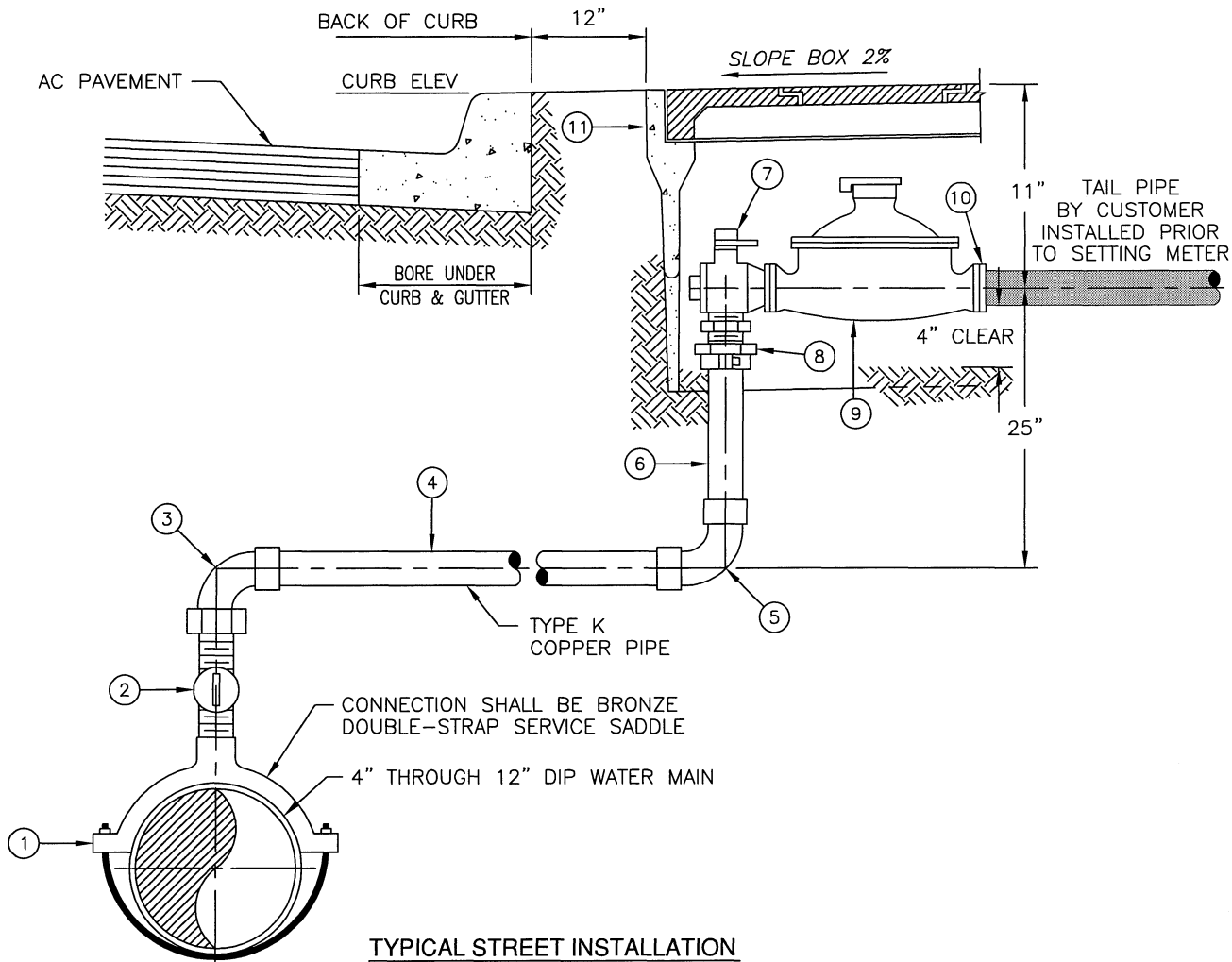


CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-600

APPROV. \_\_\_\_\_  
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 DRAWN WEF  
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BILL OF MATERIALS	
ITEM	QUANTITY
① BRONZE DOUBLE-STRAP SERVICE SADDLE (IPT)	1
② 2" BALL CORPORATION STOP MIPT x MIPT	1
③ 2" FIPT/SW BRASS 90° ELL	1
④ 2" TYPE K COPPER PIPE (SOFT)	VARIABLE
⑤ 2" SW/SW COPPER 90° ELL	1
⑥ RISER PIPE (2" HARD DRAWN COPPER)	1
⑦ 2" ANGLE BALL METER STOP (IPF x METER FLG)	1
⑧ 2" COUPLING (COMP x MIPT)	1
⑨ 1 1/2" OR 2" METER (INSTALLED BY CITY)	1
⑩ 1 1/2" OR 2" METER FLANGE (INSTALLED BY CITY)	1
⑪ METER BOX: CONCRETE COVER 2 PC OR STEEL COVER 2 PC	1

**NOTES:**

- 1.) A STEEL METER BOX LID IS REQUIRED IN ALLEY OR DRIVEWAY.
- 2.) DOUBLE GASKETS SHALL BE USED ON EACH SIDE OF METER SPACER (JUMPER) UNTIL METER IS INSTALLED BY CITY.

WATER  
 DISTRIBUTION & TRANSMISSION  
 CONSTRUCTION METHODS

2-INCH WATER SERVICE

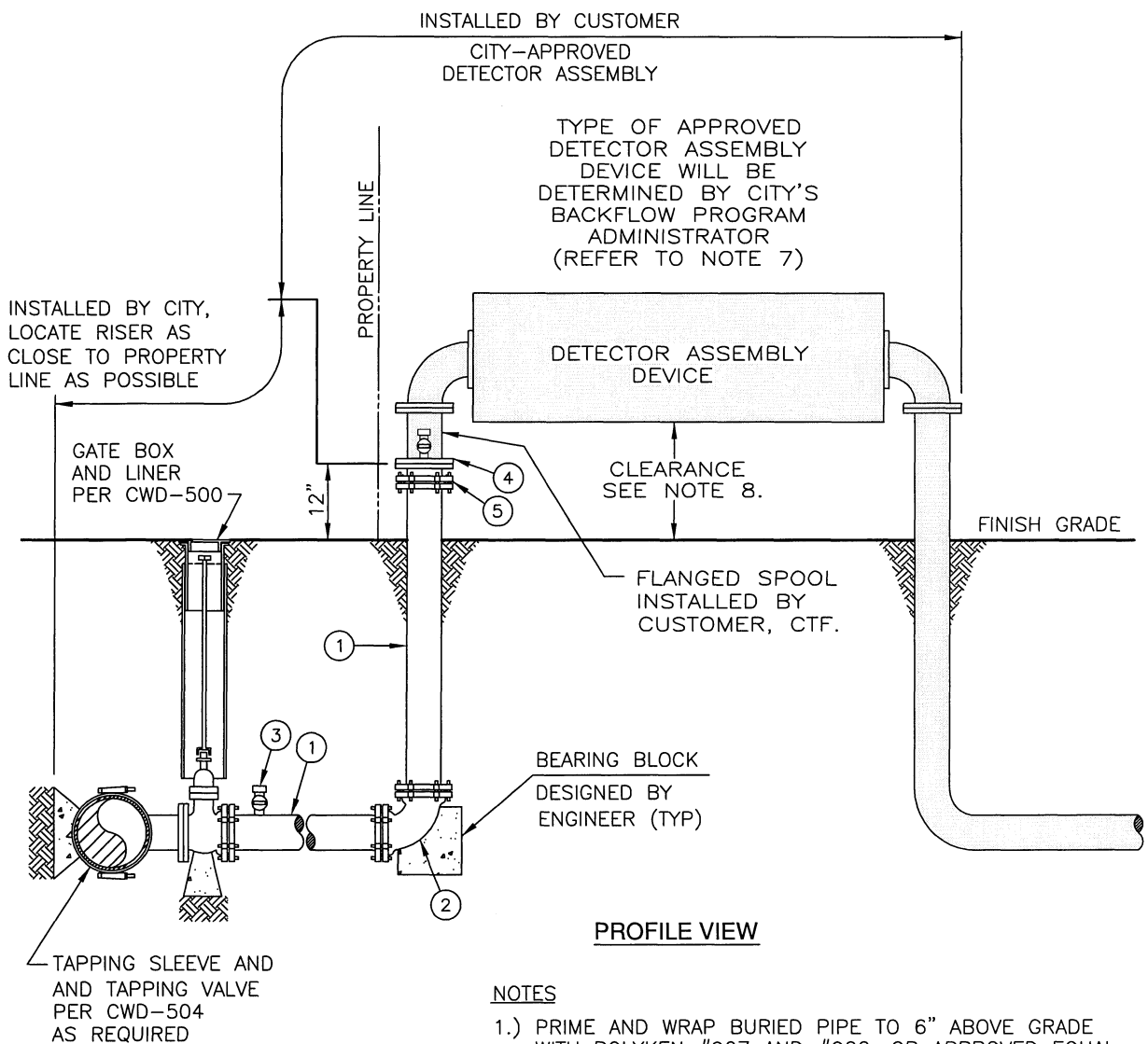


CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-601

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**PROFILE VIEW**

**NOTES**

- 1.) PRIME AND WRAP BURIED PIPE TO 6" ABOVE GRADE WITH POLYKEN #927 AND #900, OR APPROVED EQUAL.
- 2.) CITY FORCES WILL BLIND FLANGE CONNECTION POINT. WATER INSPECTOR IS TO BE PRESENT WHEN BLIND FLANGE IS REMOVED AND DETECTOR ASSEMBLY IS INSTALLED.
- 3.) FACILITIES TO BE DISINFECTED PER SPECIFICATION 205, PART 5.
- 4.) CUSTOMER TO SWAB CONNECTING VALVES WITH 600 PPM CHLORINE WHEN MAKING CONNECTION.
- 5.) CUSTOMER TO PAINT ALL ABOVE GRADE PIPING AND DETECTOR ASSEMBLY.
- 6.) FOR 10" DETECTOR ASSEMBLY INSTALL 12" LATERAL AND PIPING. CUSTOMER TO SUPPLY 12" x 10" FLANGED REDUCERS ON BOTH SIDES OF DETECTOR ASSEMBLY.
- 7.) CONTACT CITY BACKFLOW ADMINISTRATOR FOR DETECTOR ASSEMBLY SPECIFICATION, AND FOR INSPECTION AND TESTING IMMEDIATELY AFTER INSTALLATION AT (909)351-6320.
- 8.) FOR DETECTOR ASSEMBLY CLEARANCE REQUIREMENTS REFER TO CWD-630-1 AND CWD-630-2.
- 9.) RESTRAIN ALL JOINTS WITH APPROVED RESTRAINT ASSEMBLY.

MATERIALS	
ITEM	
①	DUCTILE IRON PIPE (CLASS 350)
②	90° ELL
③	1" BALL CORPORATION STOP INLET FOR CHLORINATION POINT TO BE CLOSED AND CAPPED AFTER SUCCESSFUL DISINFECTION.
④	TEMPORARY BLIND FLANGE WITH 1" IPT TAP AND 1" BALL CORPORATION STOP FOR SAMPLE.
⑤	FLANGE X MECHANICAL JOINT ADAPTOR, AS REQUIRED.

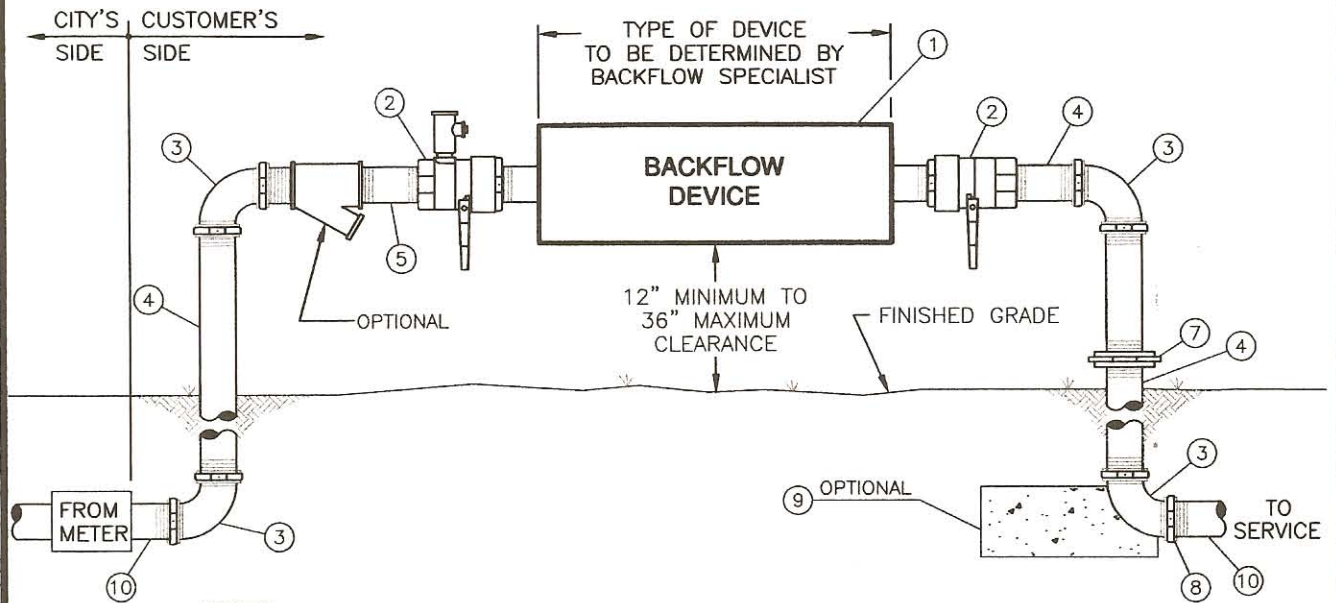
**WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS**

**4" THRU 10" ABOVE GROUND  
FIRE SERVICE**





# TYPICAL BACKFLOW DEVICE CONFIGURATION



## NOTES:

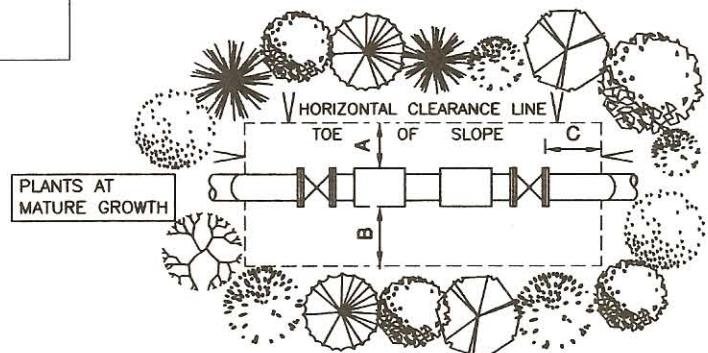
- PRIOR TO INSTALLATION, LOCATION OF THE BACKFLOW DEVICE SHALL BE SUBJECT TO THE APPROVAL OF THE BACKFLOW PROGRAM SPECIALIST 951-351-6320/6282. DEVICE SHALL BE LOCATED AS CLOSE TO METER AS PRACTICAL (MIN. 18", MAX. 24" BACK OF RW)
- PLACE BOTTOM OF DEVICE A MINIMUM OF 12 INCHES AND NOT MORE THAN 36 INCHES ABOVE FINISH GRADE.
- INSPECTION OF PLUMBING IS REQUIRED PRIOR TO CONCRETE THRUST BLOCK AND/OR ABOVE GROUND SLAB BEING POURED.
- MATERIALS SHALL BE IN COMPLIANCE WITH THE APPROVED MATERIALS SPECIFIED BELOW.
- THE DEVICE MUST BE INSPECTED AND TESTED IMMEDIATELY AFTER INSTALLATION. TO SCHEDULE AN APPOINTMENT CALL 951-351-6320/6282.

ITEM	EACH	DESCRIPTION
①	1	BACKFLOW DEVICE (TYPE OF DEVICE TO BE DETERMINED BY BACKFLOW PROGRAM SPECIALIST)
②	2	BALL VALVE
③	4	90 DEGREE ELBOW, BRASS OR HARD DRAWN COPPER
④	2	RISER & NIPPLES, BRASS OR HARD DRAWN COPPER
⑤	1	PRV VALVE (FOR PRESSURE IN EXCESS OF 80 PSI)

ITEM	EACH	DESCRIPTION
⑥	1	WYE-STRAINER (OPTIONAL)
⑦	1	BRASS OR COPPER UNION
⑧	2	P.V.C. MALE ADAPTER (FEMALE THREADED x MALE SLIP)
⑨	1	CONCRETE THRUST BLOCK (OPTIONAL)
⑩	1	SERVICE LINE, BRASS OR HARD DRAWN COPPER

ADEQUATE CLEARANCE MUST BE PROVIDED TO PERMIT TESTING AND REPAIR WORK

MINIMUM CLEARANCE SCHEDULE			
SIZE	A	B	C
3/4" THRU 2 1/2"	12"	18"	12"



OVERHEAD VIEW OF CLEARANCE REQUIREMENTS

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

BACKFLOW PREVENTION ASSEMBLY  
3/4"-2 1/2" ABOVE GROUND INSTALLATION



**PROFILE VIEW**

**NOTES:**

1. PRIOR TO INSTALLATION, LOCATION OF THE BACKFLOW DEVICE SHALL BE SUBJECT TO THE APPROVAL OF THE BACKFLOW PROGRAM SPECIALIST 951-351-6320/6282. DEVICE SHALL BE LOCATED AS CLOSE TO METER AS PRACTICAL (MIN. 18", MAX. 24" BACK OF RW)
2. PLACE BOTTOM OF DEVICE A MINIMUM OF 12 INCHES AND NOT MORE THAN 36 INCHES ABOVE FINISH GRADE.
3. INSPECTION OF PLUMBING IS REQUIRED PRIOR TO CONCRETE THRUST BLOCK AND/OR ABOVE GROUND SLAB BEING POURED.
4. MATERIALS SHALL BE IN COMPLIANCE WITH THE APPROVED MATERIALS SPECIFIED BELOW.
5. THE DEVICE MUST BE INSPECTED AND TESTED IMMEDIATELY AFTER INSTALLATION. TO SCHEDULE AN APPOINTMENT CALL 951-351-6320/6282.

ITEM	EACH	DESCRIPTION
①	1	BACKFLOW DEVICE (TYPE OF DEVICE TO BE DETERMINED BY BACKFLOW PROGRAM SPECIALIST)
②	2	FLANGED RESILIENT WEDGED GATE VALVE
③	2	90 DEGREE ELBOW
④	2	FLANGED RISER PIPE
⑤	1	PRV VALVE (FOR PRESSURE IN EXCESS OF 100 PSI)

ITEM	EACH	DESCRIPTION
⑦	2	PIPE SUPPORT
⑧	1	SERVICE LINE (NO PVC)
⑨	1	CONCRETE THRUST BLOCK
⑩	1	CONCRETE SLAB (NECESSARY TO PREVENT EROSION)

ADEQUATE CLEARANCE MUST BE PROVIDED TO PERMIT TESTING AND REPAIR WORK

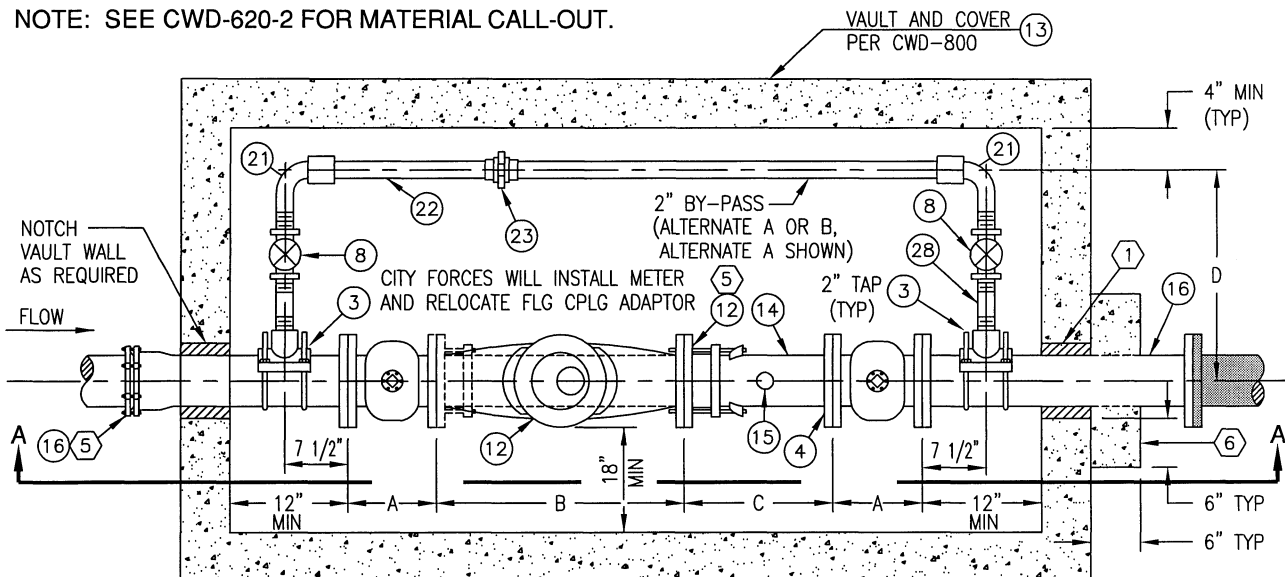
MINIMUM CLEARANCE SCHEDULE			
SIZE	A	B	C
3" AND UP	24"	24"	12"

**OVERHEAD VIEW OF CLEARANCE REQUIREMENTS**

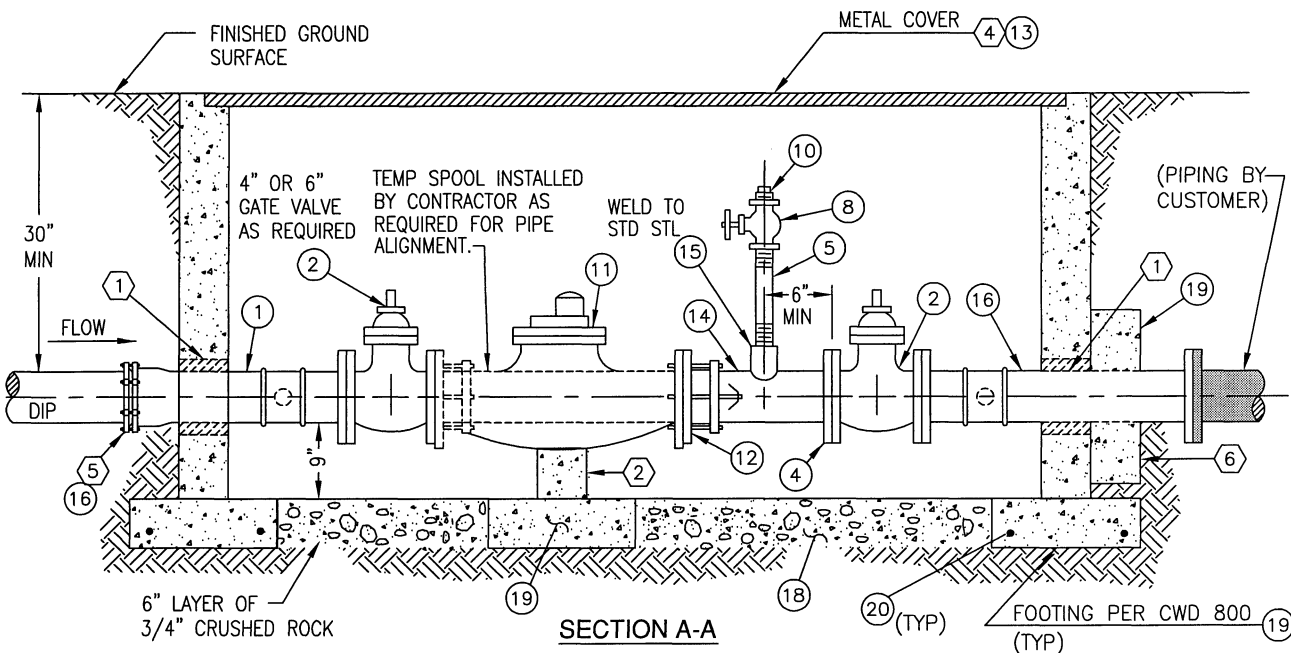
## BACKFLOW PREVENTION ASSEMBLY 3" & LARGER ABOVE GROUND INSTALLATION

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NOTE: SEE CWD-620-2 FOR MATERIAL CALL-OUT.



PLAN VIEW



SECTION A-A

**GENERAL NOTES:**

- 1) CONTRACTOR SHALL PAINT PIPING PRIOR TO INSTALLATION OF METER.

TYPICAL DIMENSIONS				
SERVICE SIZE	A	B	C	D
3 IN.	9"	24"	29"±	11"
4 IN.	9"	24"	24±	11 1/2"
6 IN.	10 1/2"	36 1/2"	13"±	12 1/2"

**CONSTRUCTION NOTES:**

- 1) DRY-PACK PIPE OPENINGS.
- 2) SUPPORT COMPOUND METER ON CONCRETE PAD WITH CONCRETE BLOCK.
- 3) CONTRACTOR SHALL INSTALL ALL PIPE, FITTINGS, AND MATERIALS BETWEEN THE TAPPING GATE AND "PIPING BY CUSTOMER", INCLUDING TEMPORARY FLANGED COUPLING CONNECTION AT INFLUENT VALVE.
- 4) ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER SECTION 310.
- 5) PROVIDE JOINT RESTRAINTS PER CONSTRUCTION SPECIFICATIONS.
- 6) POUR PCC 480-C-2000 CONCRETE THRUST COLLAR AGAINST WALL OF VAULT.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

3", 4" AND 6" COMPOUND METER  
WATER SERVICE

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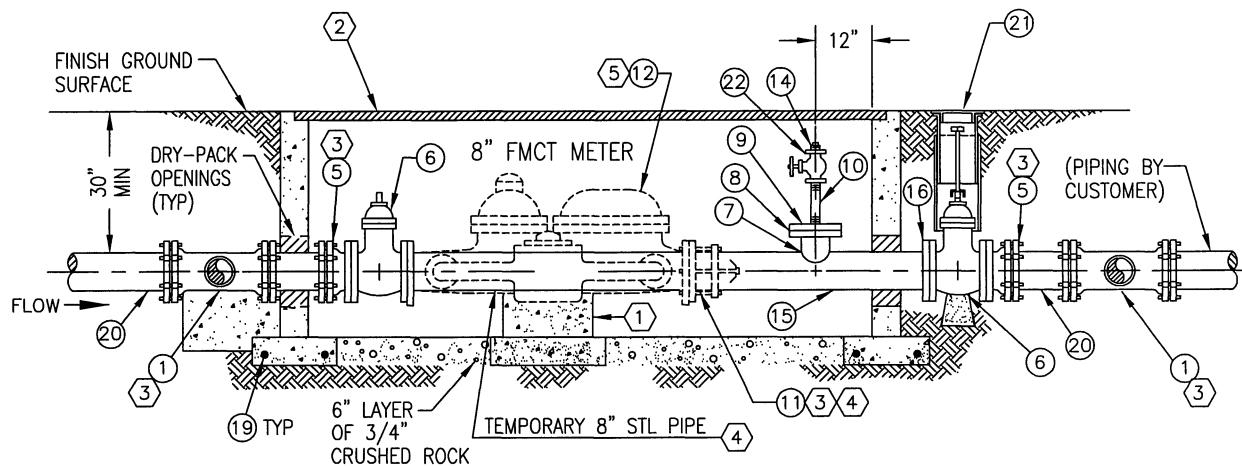
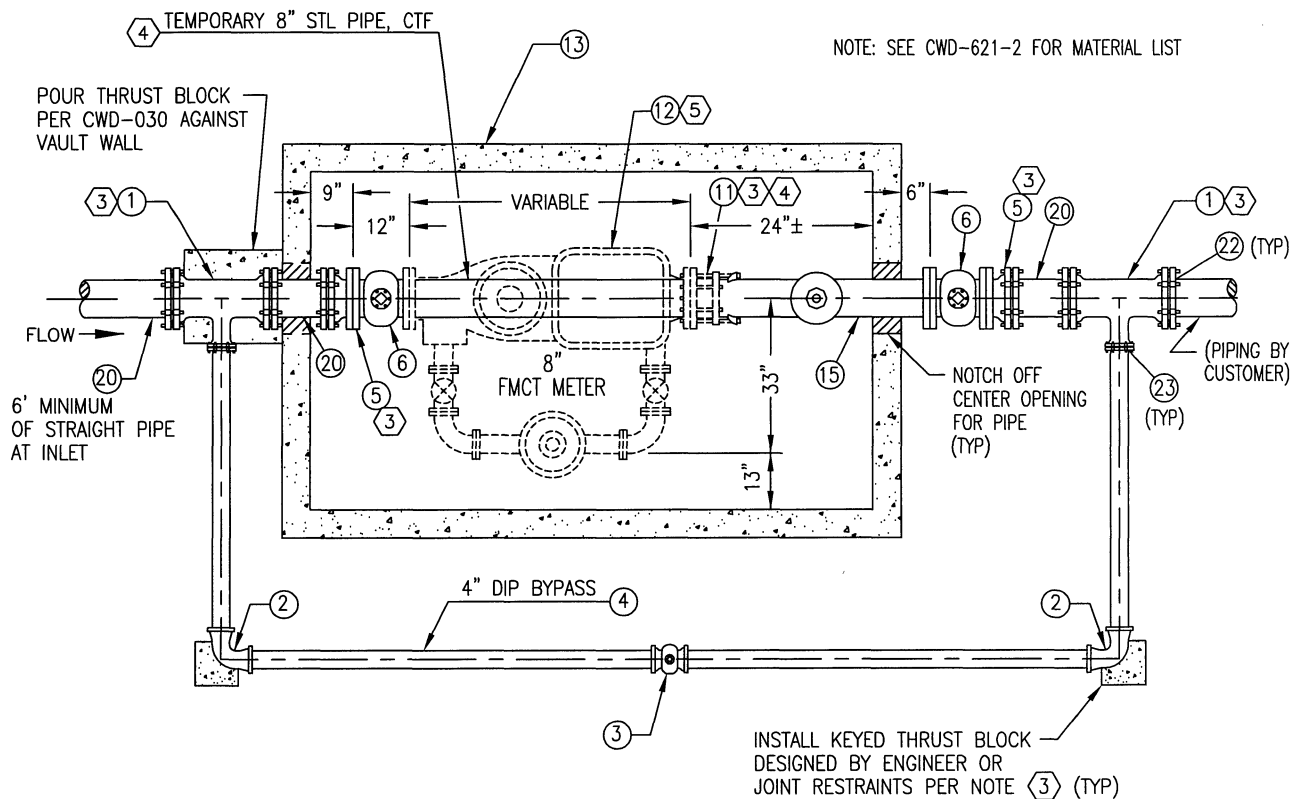
BILL OF MATERIALS				
ITEM	QUANTITIES			REFERENCE
	3" METER	4" METER	6" METER	
① DIA x 18" ADAPTER, FLG x MJ	1-(4" DIA)	1	1	
② GATE VALVE, DIA x FLG x FLG	2-(4" DIA)	2	2	
③ DIA x 2" BRONZE SERVICE SADDLE	2-(4" DIA)	2	2	
④ WELD FLANGE x DIA	1	1	1	
⑤ 2" x 12" GALV NIPPLE	1	1	1	
⑥ 4" x 3" GALV BUSHING	2	NA	NA	
⑦ 3" x 6" GALV NIPPLE	1	NA	NA	
⑧ 2" GATE VALVE - BRONZE	3	3	3	
⑨ 4" SCREW FLANGE	2-(4" DIA)	NA	NA	
⑩ 2" BRASS PLUG	1	1	1	
⑪ COMPOUND METER, DIA x FLG x FLG	1	1	1	PUR REQ
⑫ DIA x FLANGED COUPLING ADAPTER	1	1	1	
⑬ VAULT AND COVER	1	1	1	CWD-800
⑭ STEEL PIPE, DIA x (SCHEDULE 40)	3 LNR FT CTF			
⑮ 2" HEAVY BLACK COUPLING	1	1	1	
⑯ DIA X 36" DIP SPOOL FLG x FLG	1-(4" DIA)	1	1	
⑰ 3" SCREW FLANGE	2	NA	NA	
⑱ 3/4" CRUSHED ROCK	16 CU FT			
⑲ CONCRETE PCC 480-C-2000	15 CU FT			
⑳ NO. 4 REBAR	48 LNR FT±			
2" BY-PASS (ALT A)				
㉑ 2" x 90° ELL SW x MIPT	2	2	2	
㉒ 2" COPPER PIPE, SOFT	7 LNR FT ±			
㉓ 2" BRASS UNION	1	1	1	
㉔ 2" x 3" BRASS NIPPLE	2	2	2	
2" BY-PASS (ALT B)				
㉕ 2" x 90° STREET ELL	2	2	2	
㉖ 2" GALV PIPE	7 LNR FT ±			
㉗ 2" GALV UNION	1	1	1	
㉘ 2" x 3" GALV NIPPLE	2	2	2	

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

## BILL OF MATERIALS FOR 3", 4" AND 6" COMPOUND METER WATER SERVICE



0	DRAWN WFF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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GENERAL NOTES:

- ① SUPPORT METER ON CONCRETE PAD AND CONCRETE BLOCK.
- ② ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER CONSTRUCTION SPECIFICATION SECTION 310.
- ③ PROVIDE JOINT RESTRAINTS PER CONSTRUCTION SPECIFICATION.
- ④ CONTRACTOR SHALL INSTALL ALL PIPE, FITTINGS, AND MATERIALS BETWEEN THE TAPPING GATE AND "PIPING BY CUSTOMER", INCLUDING TEMPORARY FLANGE COUPLING CONNECTION AT THE INFLUENT VALVE. LOCATION.
- ⑤ CITY FORCES WILL FURNISH AND INSTALL 8" FMCT METER AND FAB METER READING LID.

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

## 8" FMCT WATER SERVICE


0	DRAWN WEF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.
1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.
2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.

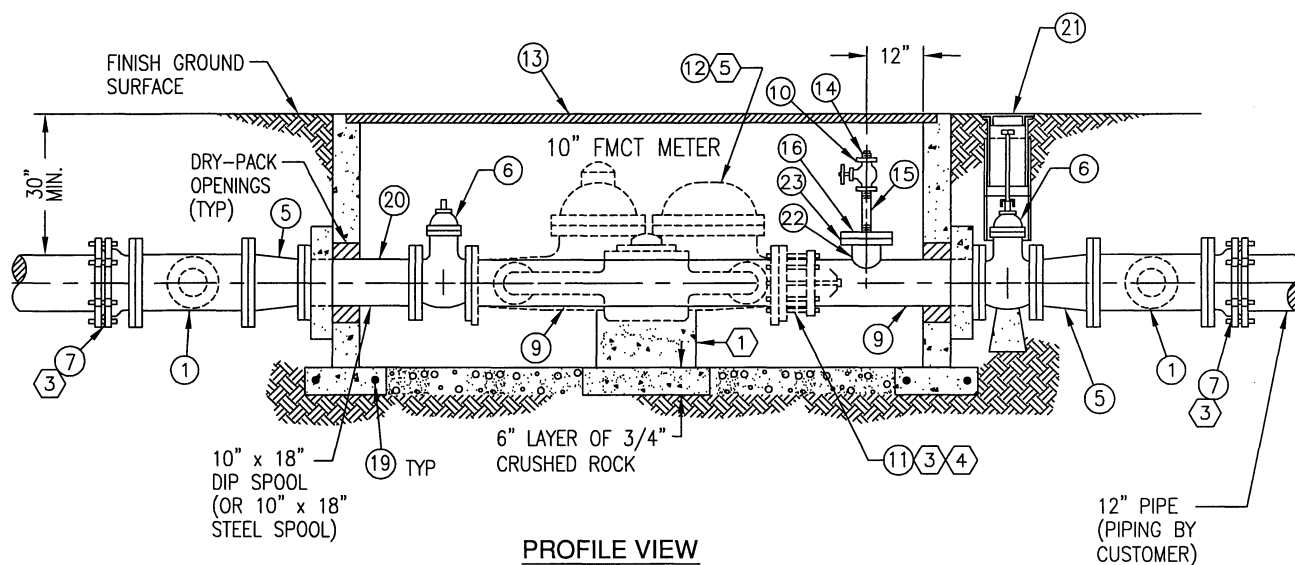
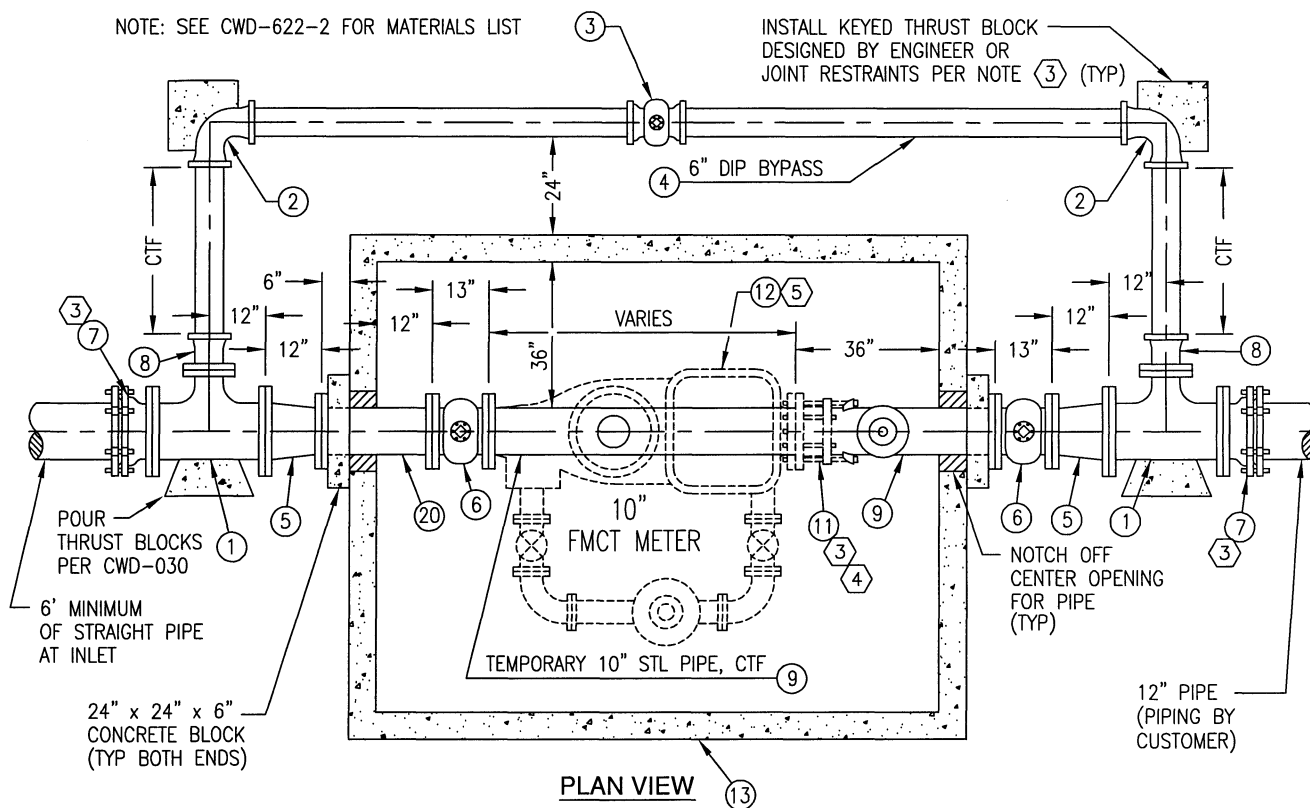
BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 8" x 4" TEE MJ X MJ	2	
② 4" - 90° ELL B X B	2	
③ 4" RW GATE VALVE B X B	1	
④ 4" DI PIPE	16 FT±	
⑤ 8" FLG X MJ ADAPTER	2	
⑥ 8" GATE VALVE F X F	2	
⑦ 6" STL PIPE (SCHEDULE 40)	1 FT	
⑧ 6" WELD FLANGE	1	
⑨ 6" BLIND FLANGE W/2" IPT TAP	1	
⑩ 2" X 12" GALV NIPPLE	1	
⑪ 8" FLANGED COUPLING ADAPTER	1	
⑫ 8" COMPOUND METER	1	
⑬ VAULT AND COVER	1	CWD-801
⑭ 2" BRASS PLUG	1	
⑮ 8" STL PIPE (SCHEDULE 40)	7 FT±	
⑯ 8" WELD FLANGE	1	
⑰ CONCRETE PCC 480-C-2000	20 CU FT±	
⑱ 3/4" CRUSHED ROCK	28 CU FT	
⑲ NO 4 REBAR	64 FT±	
⑳ 8" DI PIPE	2 FT	
㉑ 8" GATE BOX MATERIAL	1	CWD-500
㉒ 2" GATE VALVE - BRONZE	1	

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

BILL OF MATERIALS FOR  
8" FMCT WATER SERVICE



0	DRAWN WFF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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GENERAL NOTES:

- ① SUPPORT METER ON CONCRETE PAD AND CONCRETE BLOCK.
- ② ADJUST VAULT AND COVER TO MEET SIDEWALK AND CURB GRADE. PAINT PER CONSTRUCTION SPECIFICATION, SECTION 310.
- ③ PROVIDE JOINT RESTRAINTS, PER CONSTRUCTION SPECIFICATION.

## 10" DOMESTIC WATER SERVICE

0	DRAWN	DATE	CHECK	APPROV.	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
	WEF	03-04																	

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
① 12" x 6" TEE F/F *	2	
② 6" 90° ELL RT	2	
③ 6" RW GATE VALVE B/B	1	
④ 6" DI PIPE	20 FT±	
⑤ 12" x 10" REDUCER F/F	2	
⑥ 10" GATE VALVE F/F	2	
⑦ 12" FLG X MJ ADAPTER	2	
⑧ 6" F/B ADAPTER	2	
⑨ 10" STL PIPE (SCHEDULE 40)	10 FT±	
⑩ 2" BRONZE GATE VALVE	1	
⑪ 10" FLANGE COUPLING ADAPTER	1	
⑫ 10" COMPOUND METER	1	
⑬ VAULT AND COVER	1	CWD-802
⑭ 2" BRASS PLUG	3	
⑮ 2" X 12" GALV NIPPLE	1	
⑯ 6" BLIND FLG W/2" IPT TAP	1	
⑰ CONCRETE PCC 480-6-2000	40 CU FT	
⑱ 3/4" CRUSHED ROCK	40 CU FT	
⑲ NO 4 REBAR	64 FT±	
⑳ 10" x 18" DIP SPOOL, F/F	ALTERNATE FOR STEEL	
㉑ 8" GATE BOX MATERIAL	1	
㉒ 6" STL PIPE (SCHEDULE 40)	1	
㉓ 6" WELD FLG	1	

\* 12" x 12" TEE F/F WITH 12" x 6" REDUCER  
MAY BE USED INSTEAD OF 12" x 12" x 6" TEE.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

BILL OF MATERIALS FOR  
10" COMPOUND WATER SERVICE





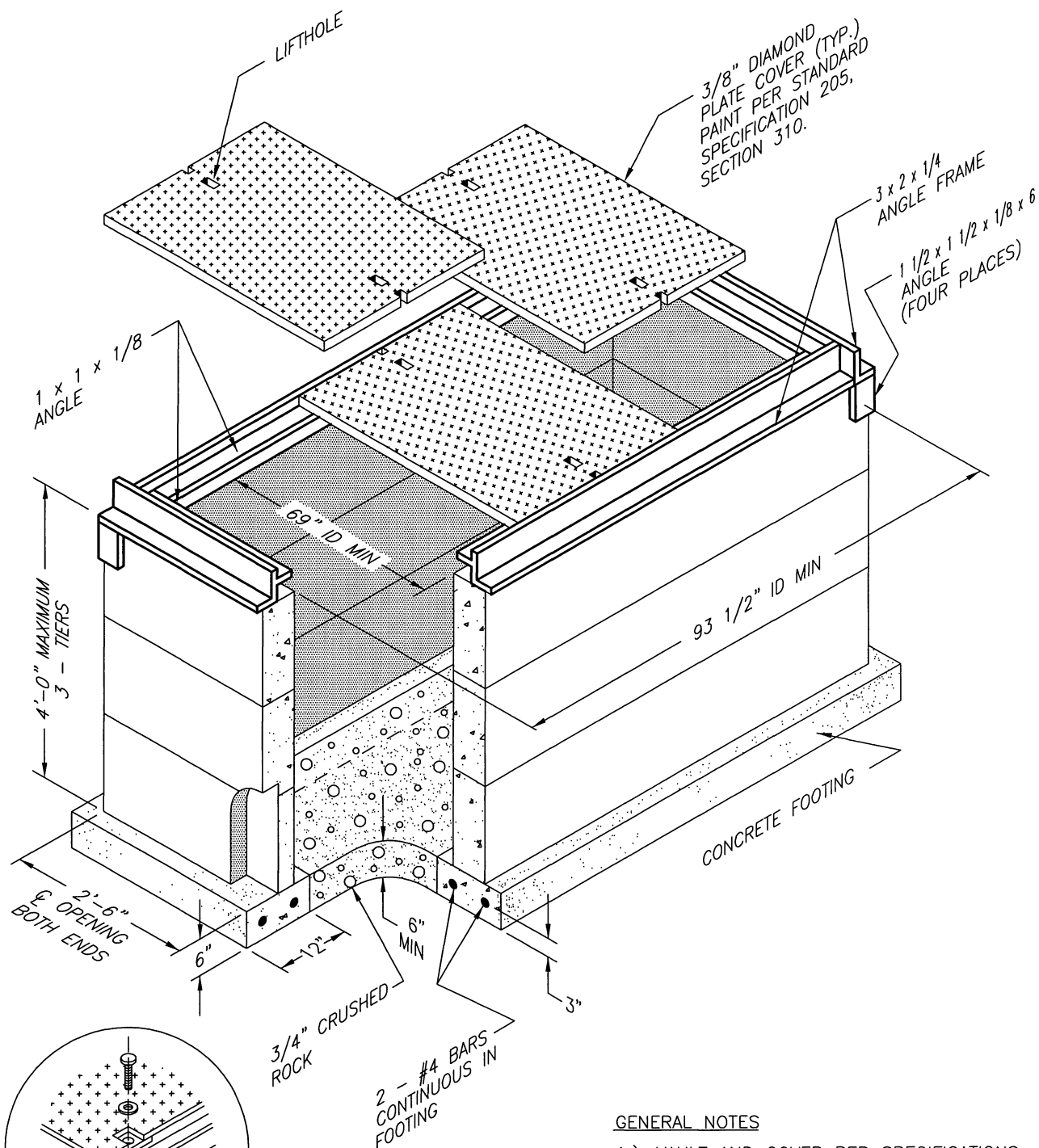
FIGURE 1-10 OUTLET ORIENTATION DETAIL  
NTS

**NOTES**

- 1.) REGULAR OR SUPER HYDRANT IN ACCORDANCE WITH PLAN AND SPECIFICATIONS.
- 2.) BREAK-OFF BOLTS REQUIRED BETWEEN FIRE HYDRANT AND FLANGE IN ACCORDANCE WITH SPECIFICATIONS. INSTALL WITH NUT ON TOP.
- 3.) DI BURY AND FIRE HYDRANT FLANGE SHALL BE 6-HOLE.
- 4.) FIRE HYDRANT OUTLETS SHALL FACE STREET.
- 5.) FIRE HYDRANT VALVE SHALL BE A MINIMUM OF 10 FEET FROM HYDRANT.
- 6.) THRUST AND BEARING BLOCKS PER CWD-030
- 7.) FURNISH AND INSTALL A STIMSONITE MODEL 88AB TWO-WAY BLUE REFLECTIVE FIRE HYDRANT MARKER DIRECTLY OPPOSITE HYDRANT, LOCATE MARKER ON HYDRANT SIDE OF STREET CENTERLINE IN ACCORDANCE WITH THE ABOVE DETAIL, WITH REFLECTIVE SIDE FACING ONCOMING TRAFFIC, PROVIDE 2 - MARKERS FOR HYDRANTS INSTALLED AT INTERSECTIONS.
- 8.) ALL PIPE TO BE POLYETHENE-ENCASED PER SPECIFICATION SECTION 306.
- 9.) IF MAIN LINE MUST BE WET TAPPED, SEE CWD-504.

BILL OF MATERIALS		
ITEM	QUANTITY	REFERENCE
(1) REGULAR FIRE HYDRANT OUTLETS: 1 - 2 1/2", 1 - 4"	1	
(2) SUPER FIRE HYDRANT OUTLETS: 2 - 2 1/2", 1 - 4"		
(3) 6" GATE VALVE, FLG/MJ, RW	1	CWD-500
(4) MAINLINE X 6" TEE	1	
(5) 6" DI BURY, FLG/MJ	1	
(6) 6" DI PIPE	1	
(7) 8" GATE BOX CAP, GALV SPLIT-SLEEVE, AND 12 GA STL PIPE	1	CWD-515
(8) 6" GRIP RING	2	

0	DRAWN WEF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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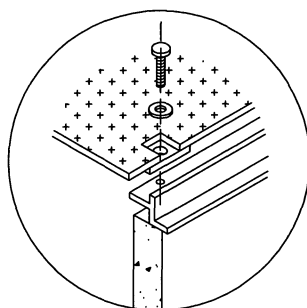
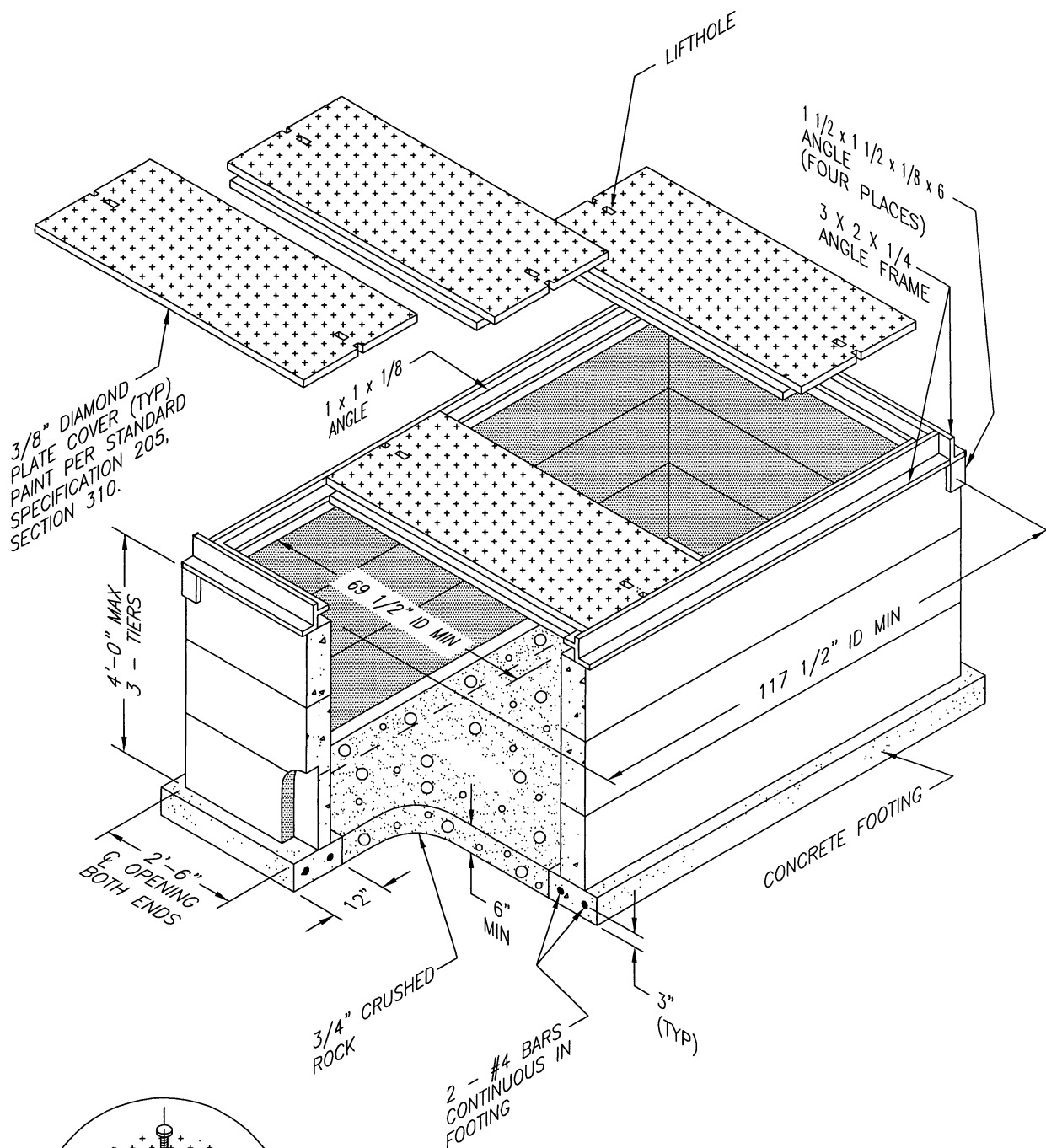
### GENERAL NOTES

- 1.) VAULT AND COVER PER SPECIFICATIONS.
- 2.) FOOTING SHALL BE POURED AGAINST UNDISTURBED SOIL, PCC 560-C-3250.
- 3.) VAULT LOCATION TO BE APPROVED BY WATER DIVISION, PUBLIC UTILITIES.
- 4.) A JOINT SEALING COMPOUND SHALL BE USED AT ALL JOINTS

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

## NON-TRAFFIC VAULT FOR 3" THRU 6" COMPOUND METERS

0	DRAWN WFF	DATE 03-04	CHECK	APPROV. 	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
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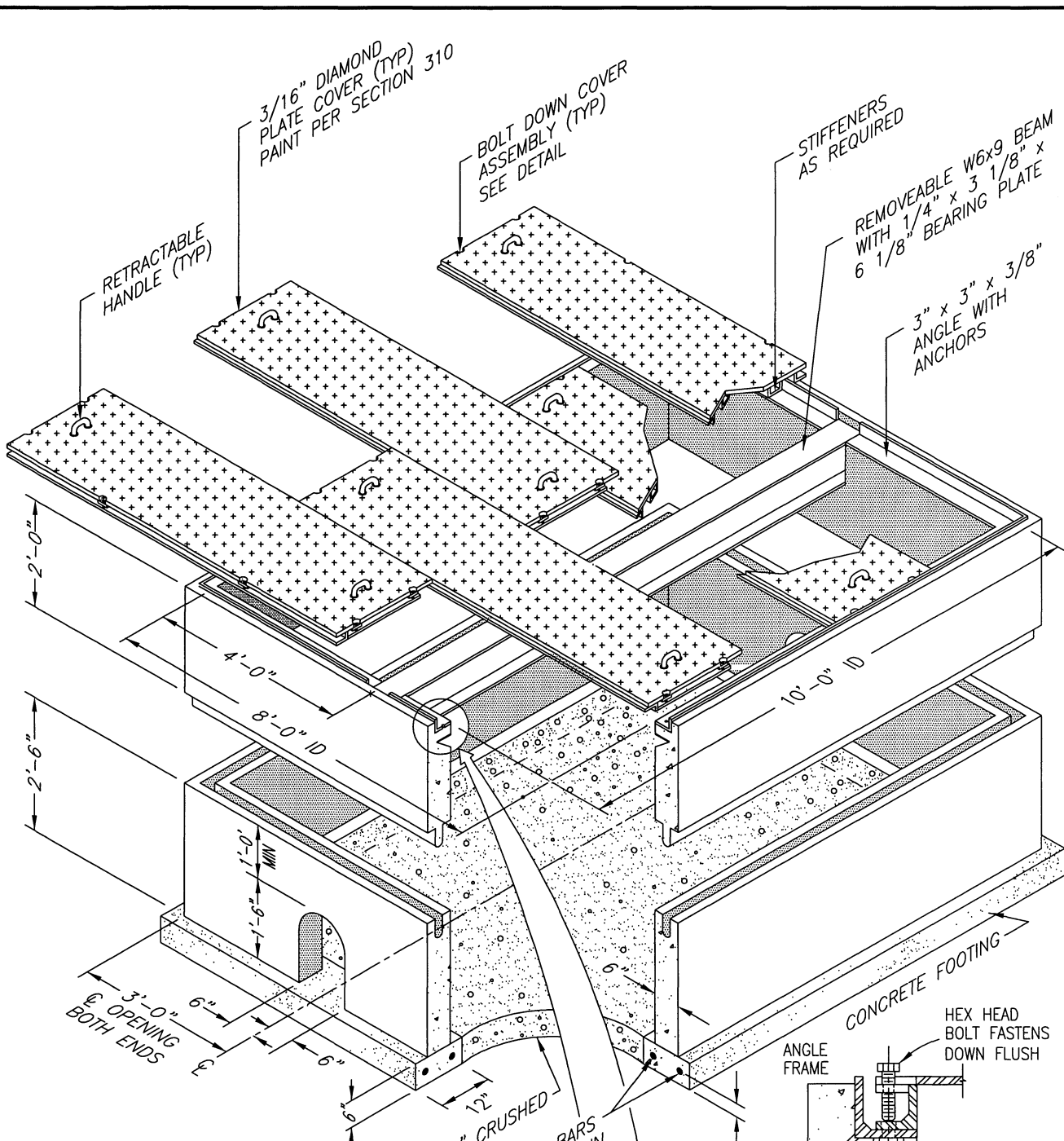
DETAIL  
COVER BOLT DOWN  
ASSEMBLY

### GENERAL NOTES

- 1.) VAULT AND COVER PER SPECIFICATIONS.
- 2.) FOOTING SHALL BE POURED AGAINST UNDISTURBED SOIL, PCC 560-C-3250.
- 3.) VAULT LOCATION TO BE APPROVED BY WATER DIVISION, PUBLIC UTILITIES.
- 4.) A JOINT SEALING COMPOUND SHALL BE USED AT ALL JOINTS

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

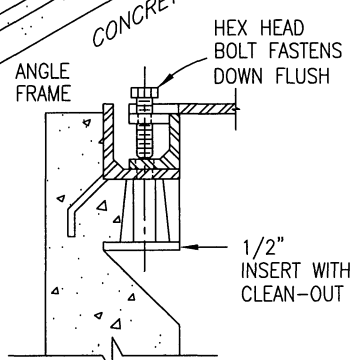
## NON-TRAFFIC VAULT FOR 8" COMPOUND METERS



## GENERAL NOTES

- 1.) VAULT AND COVER PER SPECIFICATIONS.
- 2.) FOOTING SHALL BE POURED AGAINST UNDISTURBED SOIL, PCC 560-C-3250.
- 3.) VAULT LOCATION TO BE APPROVED BY WATER DIVISION, PUBLIC UTILITIES.
- 4.) A JOINT SEALING COMPOUND SHALL BE USED AT ALL JOINTS

3/4" CRUSHED  
ROCK  
2 - #4 BARS  
CONTINUOUS  
FOOTING

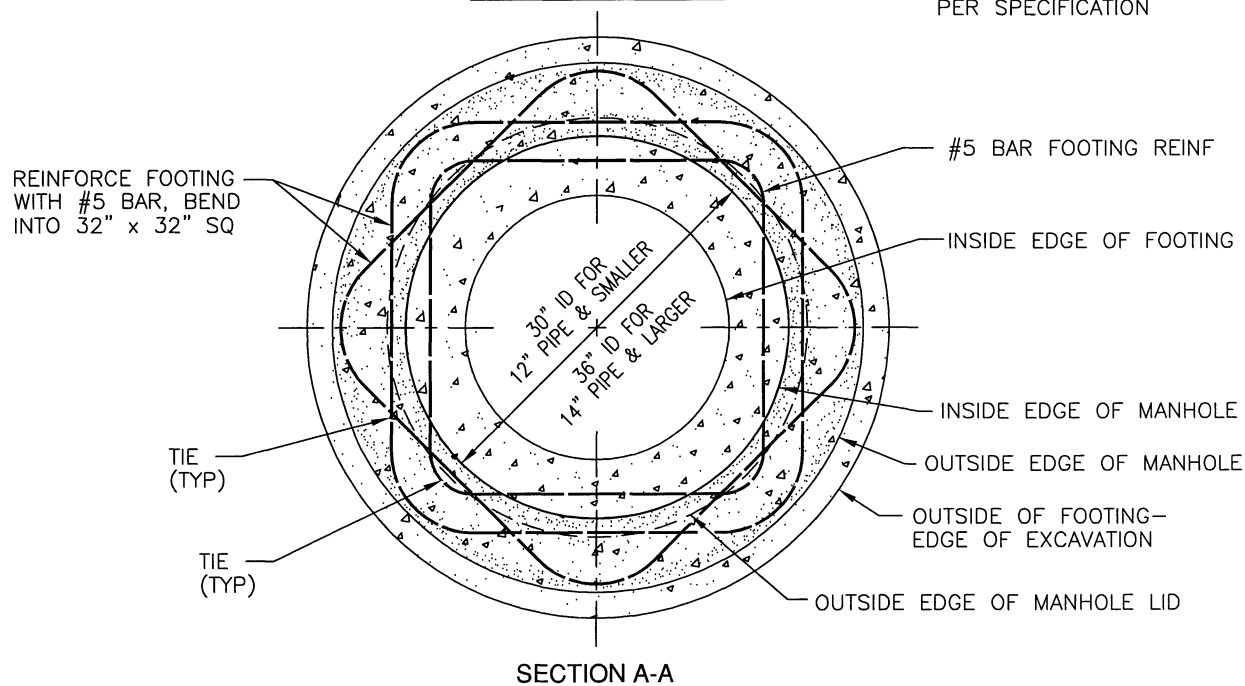
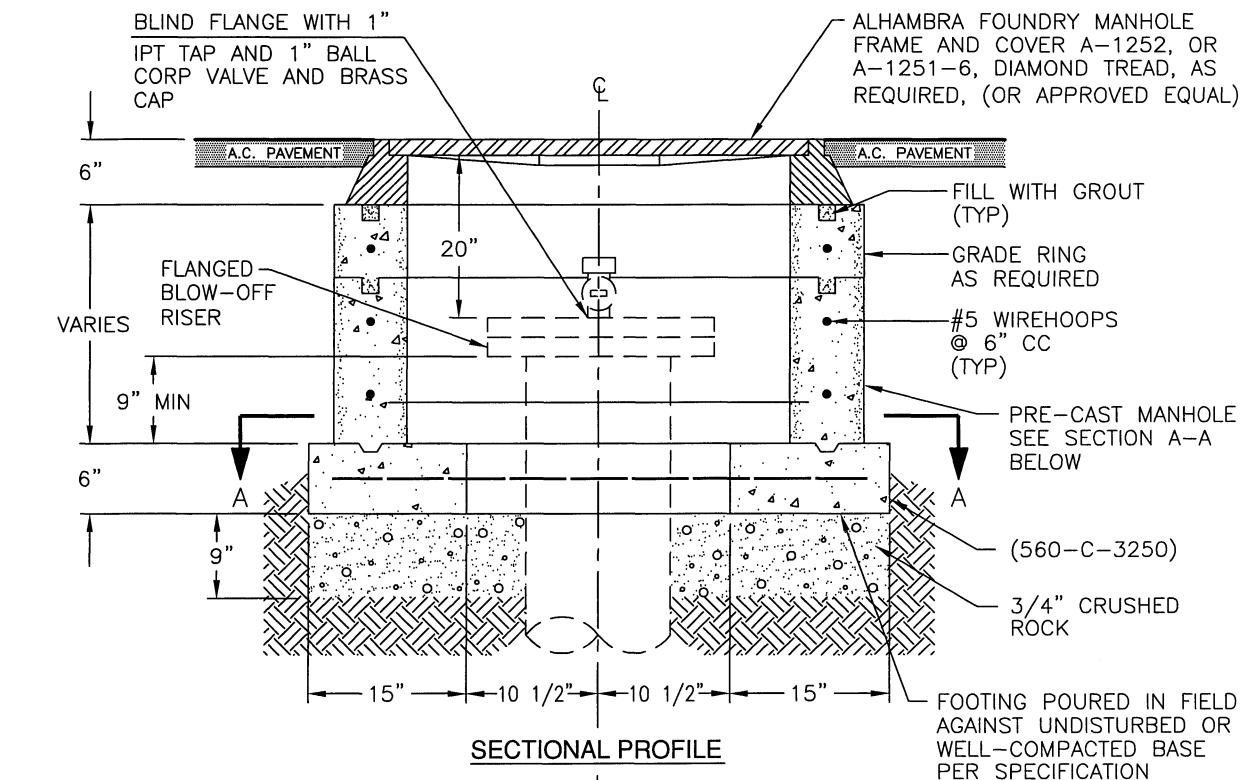


DETAIL  
COVER BOLT DOWN  
ASSEMBLY

## DETAIL

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

## NON-TRAFFIC VAULT FOR 10" COMPOUND METERS

[illegible]

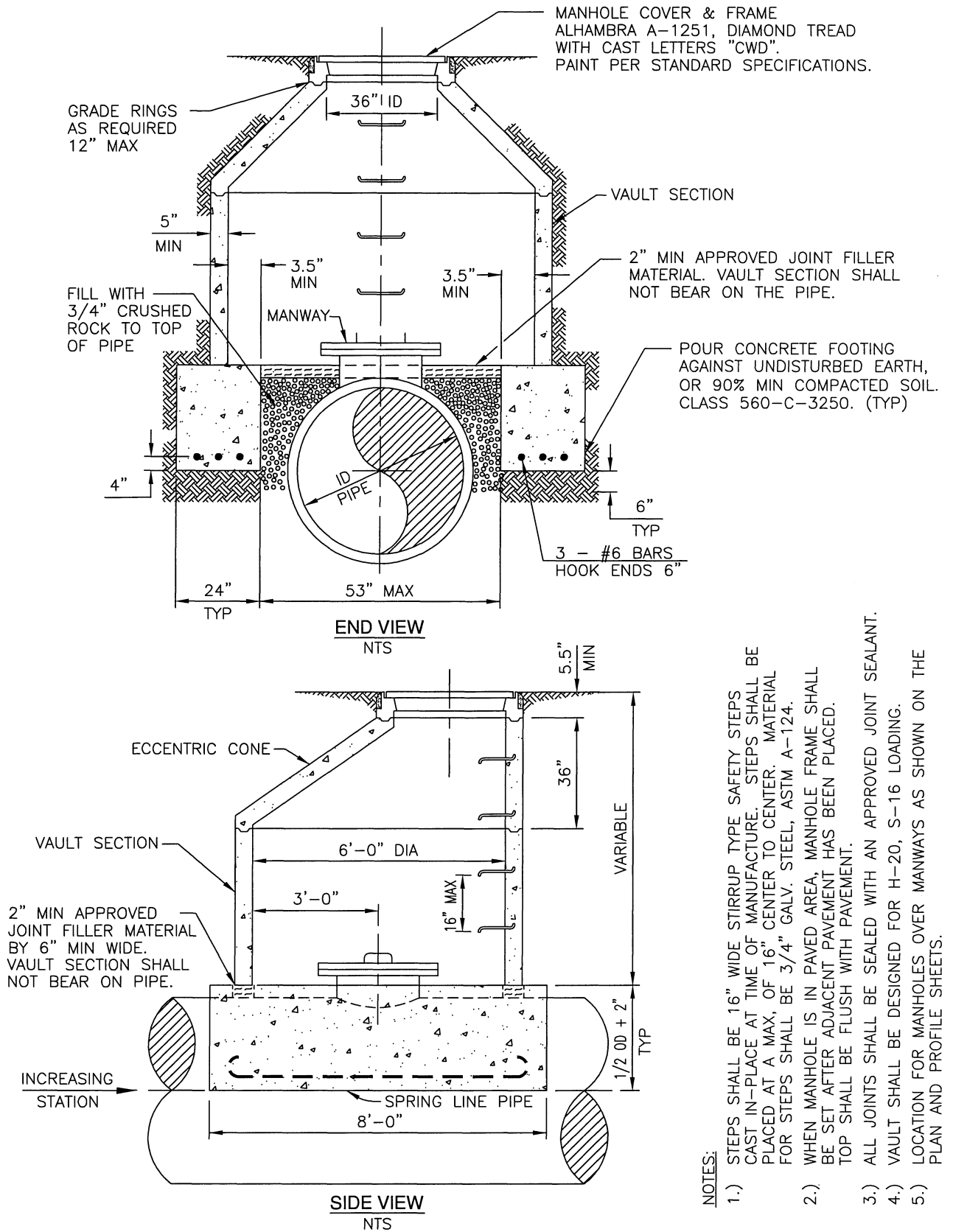
PRE-CAST MANHOLE SECTION SPECIFICATIONS:

- 1) DESIGN LOADING H = 20 - S 16
- 2) CEMENT: TYPE II, ASTM C150, 3250 PSI
- 3) REINFORCEMENT: GRADE 40 OR GRADE 60 ASTM A615
- 4) COVER TO BE DIAMOND-TREAD FINISH, LETTERED "CWD"

## WATER DISTRIBUTION & TRANSMISSION CONSTRUCTION METHODS

## BLOW-OFF MANHOLE INSTALLATION

0	DRAWN	DATE	CHECK	APPROV.	1	DRAWN	DATE	CHECK	APPROV.	2	DRAWN	DATE	CHECK	APPROV.	3	DRAWN	DATE	CHECK	APPROV.
WEF		03-04																	



WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

## MANHOLE DETAIL 48" MAX ID PIPE







VARIABLE  
LENGTH AND POSITION  
TO BE FIELD DETERMINED  
AS DIRECTED BY ENGINEER

1'  
MIN

PROPERTY LINE  
OR RIGHT OF WAY

GUARD POST  
PER CWD 900-B

TEST LEAD BOX  
BROOKS NO. 37T BOX  
WITH CAST-IRON COVER  
(PAINT SAFETY YELLOW)

2 - NO. 4 STRANDED COPPER  
CONDUCTORS WITH 600 V NEOPRENE  
INSULATION

PROVIDE 4'  
OF SLACK

FINISH GROUND  
SURFACE

WATER MAIN

PIPE TRENCH  
WALLS

HAND BACKFILL  
IN AREA OF  
WIRE

SEAL ANNULAR OPENING  
OF PVC PIPE W/SILICONE  
OR APPROVED EQUAL (TYP)

8" OF 3/4"  
CRUSHED ROCK

2"Ø PVC PIPE  
(SCHEDULE 40)  
LOCATE PVC PIPE CLOSE  
AS POSSIBLE TO WATER MAIN  
AND WITHIN THE  
TEST LEAD BOX

WELD  
CONNECTION

PROVIDE 6'  
OF SLACK

EPOXY SEALANT  
SELECT BOND GP-3000  
OR APPROVED EQUAL

STEEL CYLINDER PIPE  
OR DUCTILE IRON PIPE

CONCRETE FOOTING

NOTES

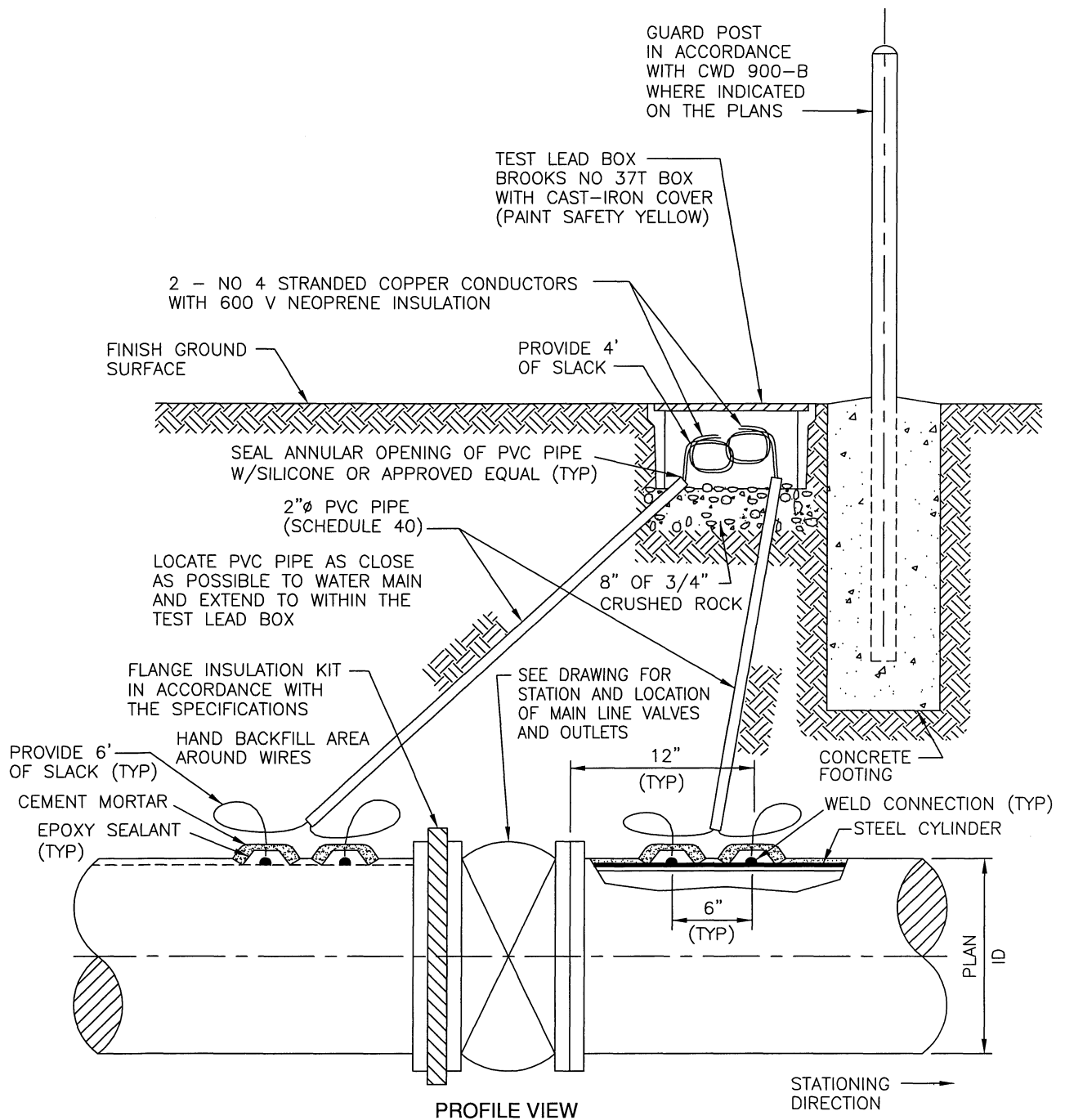
1.) "CADWELD" TYPE HA-3 CONNECTION, CAH AA-IL, WITH F33 STANDARD CHARGE (STEEL PIPE);  
TYPE HB CONNECTION, CA HBA-16, XF-19 CHARGE (DUCTILE IRON PIPE); OR CITY APPROVED EQUAL.

2.) PREPARATION OF CONDUCTOR AND PIPE SURFACES SHALL BE MADE PER THE PUBLISHED INSTRUCTIONS  
OF THE CONNECTOR MANUFACTURER.

3.) SEE DRAWINGS FOR STATION AND LOCATION OF TEST LEAD CONNECTIONS.

4.) EPOXY SEALANT: MIX AND FIRMLY APPLY EPOXY PUTTY TO PROVIDE A WATER-TIGHT SEAL AT LEAST  
1/4 INCH THICK OVER WELD AND BARE WIRE. OVERLAY WIRE INSULATION BY 1/2 INCH.

APPROV.	CHECK	DATE	DRAWN	3	APPROV.	CHECK	DATE	DRAWN	2	APPROV.	CHECK	DATE	DRAWN	1	APPROV.	CHECK	DATE	DRAWN	0



#### NOTES

- 1.) FLANGE INSULATION GASKETS SHALL BE FULL-FACED, NEOPRENE-COATED FABRIC-REINFORCED PHENOLIC, 1/8 INCH THICK. A ONE-PIECE SLEEVE AND WASHER, SEPARATE PHENOLIC WASHER, AND TWO CADMIUM-PLATED STEEL WASHERS SHALL BE USED FOR EACH BOLT OR CAP SCREW.
- 2.) FLANGE KITS SHALL BE FURNISHED IN ACCORDANCE WITH THE SPECIFICATIONS.
- 3.) TEST LEAD CONNECTIONS AND LOCATIONS IN ACCORDANCE WITH CWD-922.
- 4.) TEST LEADS SHALL BE TAGGED AND/OR COLOR-CODED EAST/WEST OR NORTH/SOUTH OF VALVE.
- 5.) TEST LEAD INSULATION KIT SHALL BE STRIPPED BACK ONE INCH FROM ENDS.
- 6.) WHEN FLANGE KITS ARE SPECIFIED: SIZE\_\_\_\_\_ - 150# - TYPE EN-DW.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

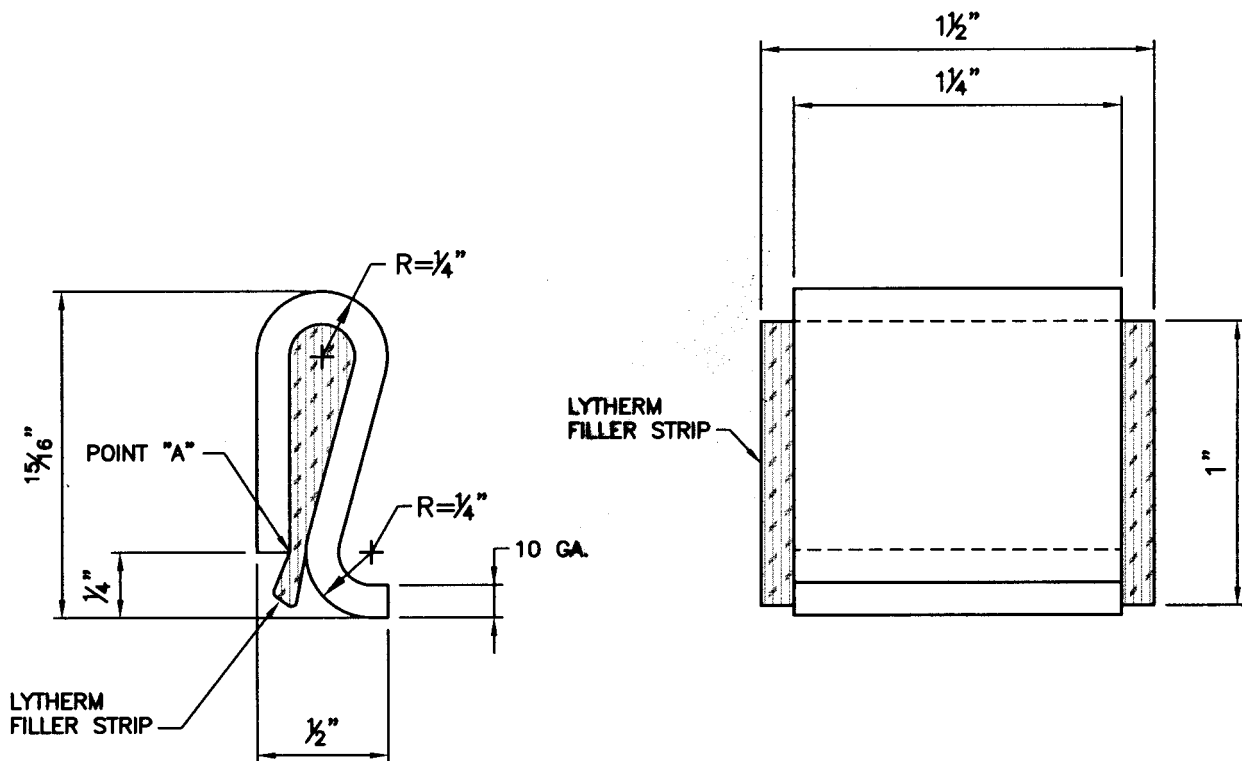
FLANGE INSULATION  
AND TEST LEAD INSTALLATION



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-923



**NOTES:**

1. STEEL BONDING CLIP SPECIFICATIONS:  
MATERIAL SPECIFICATION ASTM A356 COMMERCIAL QUALITY  
CUT LENGTH =  $2\frac{1}{2}" + \frac{1}{8}"$ , WIDTH =  $1\frac{1}{4}" + \frac{1}{8}"$ .
2. LYTHERM FILLER STRIP DIMENSIONS TO BE  $1" \times 1\frac{1}{2}"$   
IN ORDER TO OVERLAP SIDES OF CLIP.
3. CRIMP BONDING CLIP OVER FILLER AT POINT "A" TO  
COMPRESS FILLER.

**PERFORMANCE NOTE:**

THE ADDED FLEXIBILITY OF THE BONDING CLIP ( $\frac{3}{4}"$  + MOVEMENT TOLERANCE) SIGNIFICANTLY REDUCES THE CHANCES OF WELDS BREAKING, AS OPPOSED TO THE RIGID "S"-BAR.

PIPE SIZE	JUMPERS/JOINT
16" THRU 24"	2
24" THRU 54"	3

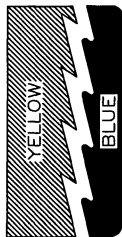
MILD STEEL JOINT BOND

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

JOINT BOND  
DETAILS

0	DRAWN WEF	DATE 03-04	CHECK	APPROV. 	DRAWN 1	DATE	CHECK	APPROV. 2	DRAWN	DATE	CHECK	APPROV. 3	DRAWN	DATE	CHECK	APPROV.

60"



CITY OF RIVERSIDE

ANOTHER

PUBLIC UTILITIES PROJECT

(STREET NAME)

(DIA.) WATER (DISTRIBUTION OR TRANSMISSION) MAIN

(STREET NAME) TO (STREET NAME)

PROJECT DURATION: (DATE) THRU (DATE)

CONTRACTOR IS:

(COMPANY NAME)

PHONE: (COMPANY PHONE NUMBER)

THANK YOU FOR YOUR PATIENCE!

FOR INFORMATION, PLEASE CALL: (909) 826-5285

NOTIFICATION SIGN NOTES:

- 1). SIGN DIMENSIONS ARE TO BE 48" HIGH X 60" WIDE. DIMENSION LETTERS AS SHOWN ABOVE WITH CENTERED TEXT.
- 2). SIGN SHALL BE BLUE LETTERS ON WHITE BACKGROUND WITH RPU LOGO IN YELLOW AND BLUE ON WHITE BACKGROUND.
- 3). SIGNS SHALL BE POSTED A MINIMUM OF ONE WEEK PRIOR TO CONSTRUCTION.
- 4). SIGN SHALL BE POSTED AT EACH END OF THE PROJECT AND LOCATIONS TO BE APPROVED BY THE ENGINEER PRIOR TO ERECTING THE SIGNS.
- 5). SEE CWD-960-2 FOR CONSTRUCTION OF SIGN.

WATER  
DISTRIBUTION & TRANSMISSION  
CONSTRUCTION METHODS

NOTIFICATION SIGN



CITY OF RIVERSIDE PUBLIC UTILITIES STANDARD DRAWING

DATE: MAR 2004

CWD-960-1

